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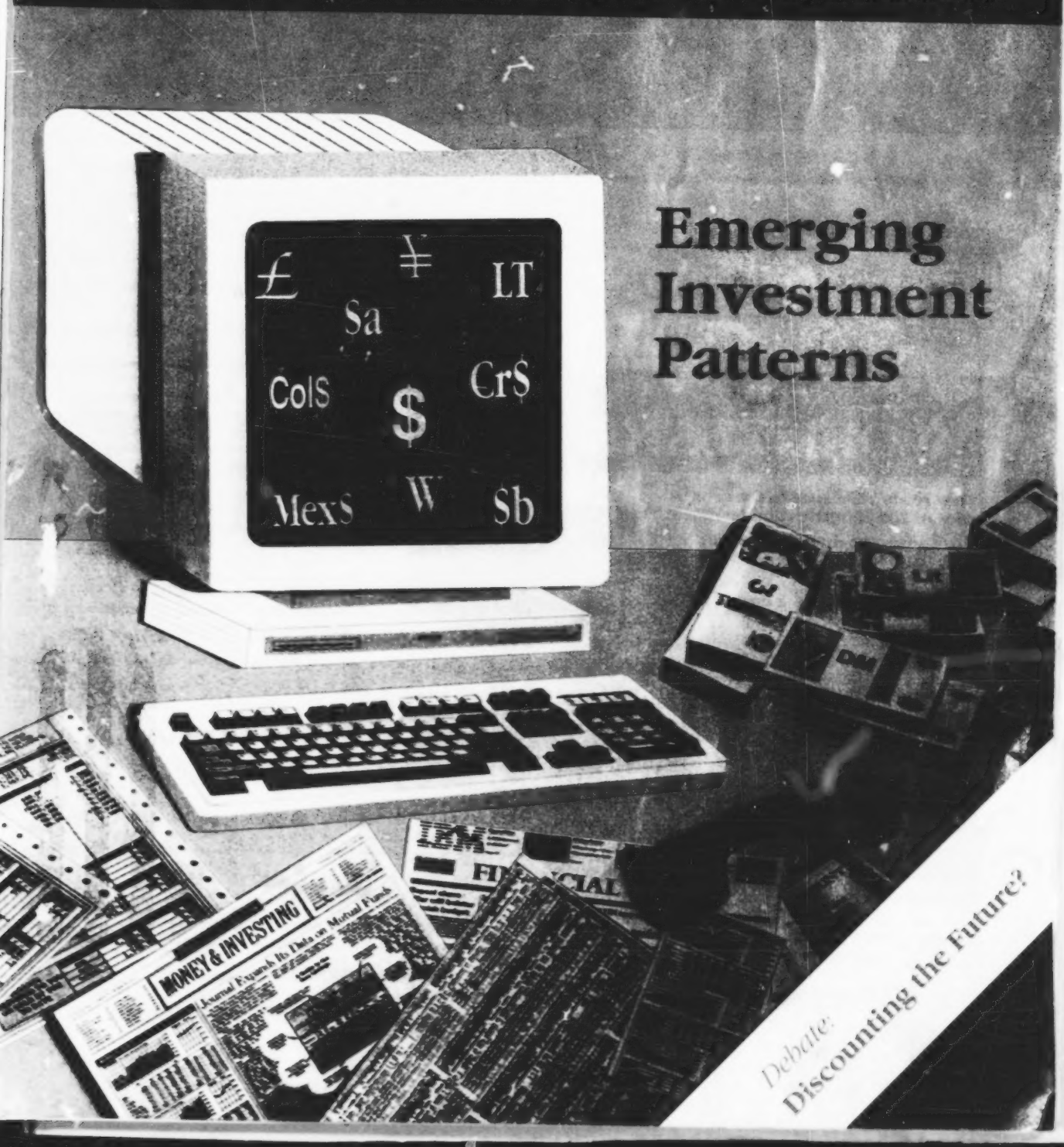

Emerging Investment Patterns

Debate: Discounting the Future?

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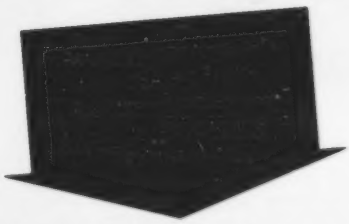

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ADVICE & DISSENT

Discounting Our Descendants?

Global warming used to be considered an esoteric topic, a matter best reserved for scientists and alarmists. But in recent years, policymakers all over the world have been forced to bone up on this futuristic issue—the possible warming of the earth's surface from emissions of carbon dioxide (CO_2) and other greenhouse gases. Although big question marks still surround the extent to which temperatures will rise and the potential ecological and economic ramifications—minor or catastrophic—a consensus has been building for nations to act.

In that spirit, at the June 1992 Earth Summit in Rio de Janeiro, more than 150 countries signed a convention aimed at stabilizing concentrations of these gases. Industrial countries recognized the desirability of returning to their 1990 emissions levels by the year 2000, and a mechanism for deciding on stronger measures in the future, if warranted, was set up. But few specific measures or targets were included, reflecting a widespread disagreement on just how activist nations should be. The stumbling block, as voiced most strongly by the United States, was a paucity of studies that rigorously set out both the costs and benefits (damage avoided) of abating carbon emissions. In actuality, quite a lot had been done on the cost side, but very little had been done on estimating benefits.

For that reason, *The Economics of Global Warming*, a recently published book by William Cline (see below), with the Washington-based Institute for International Economics (a private, nonprofit institution), has drawn much attention. Using the technique of cost-benefit analysis, it concludes that primarily on economic grounds—with many ecological effects omitted—an "aggressive" action program by nations is warranted. What separates the Cline study from those done by others is the time frame: the analysis extends out to 300 years, far longer than the usual 80-120 years. In addition, Cline advocates the use of a low (about 2 percent) discount rate—that is, the rate at which we translate future net returns into their present value—a controversial proposition, to put it mildly.

Although straightforward when dealing with easily quantifiable expenditures and returns, the cost-benefit exercise loses much of its precision when used to weigh projects aimed at dealing with a narrow set of environmental issues—chiefly, global warming, biodiversity, and resource depletion. One complication is that the market does not put a price on many of the noneconomic benefits (beautiful scenery, for example). Another is that many of these benefits are subject to considerable uncertainty. Still another problem, and this is where the discount rate comes in, is that while the costs under consideration occur now, most of the benefits are far in the future, perhaps even in many generations to come. As a result, even a small change in the discount rate used in a cost-benefit analysis has a tremendous impact on the bottom line. For example, if a 1 percent discount rate is used, $1 million to be received 200 years in the future is worth $140,000 today, but at a 10 percent rate, that same $1 million is worth only one half of one cent (see table).

This is why some people—especially environmentalists—insist that when it comes to setting the level of the discount rate, long-term investments to protect the environment must be treated differently. They advocate a special low discount rate. Otherwise, they say, no project where the costs are now and the benefits many generations hence will ever survive the cost-benefit test.

Cline, too, advocates a low rate, but for a different reason. He says environmental projects should be treated no differently from other projects. However, if the proper cost-benefit methodology is used, the result—at least for global warming—will necessarily be a low discount rate.

Others, such as the World Bank, worry that an especially low discount rate would actually reduce the wealth passed on to the next generation by financing projects whose rates of return are lower than those for other available investments. This in turn could reduce the ability or willingness of that generation to allocate resources to environmental protection.

A few economists even propose using an overriding criterion, such as "sustainability" (generally agreed to mean ensuring that present needs are met without compromising future generations). After all, the argument goes, it is a question of equity and resource ownership: we should be obligated to bequeath to posterity not only a certain stock of wealth but also a certain fraction of that wealth in natural capital—which raises questions above and beyond that of simply the discount rate.

As the debate heats up, irrespective of how the earth is doing, *Finance & Development* thought it a good time to invite Cline and the World Bank—who share a deep concern about environmental issues, but differ on the best way to make decisions that will benefit future generations—to air their views.

Laura Wallace
Assistant Editor

What a difference a rate makes

Discount rate (Annual percentages)	Amount of $1 compounded over 200 years	Present value of $1 received 200 years in future
0.0	1.00	1.00
1.0	7.32	0.14
5.0	17,293.00	0.000058
10.0	189,900,000.00	0.00000000527

Source: Cline, *The Economics of Global Warming*, 1992.

The Economics of Global Warming, *Institute for International Economics, 11 Dupont Circle NW, Washington, DC 20036, USA, 1992, xi + 399 pp., $40 ($20 paper).*

"Give Greenhouse Abatement a Fair Chance"

WILLIAM R. CLINE
Senior Fellow, Institute for International Economics

Global warming from the buildup of carbon dioxide, methane, and other greenhouse gases is nearly unique as an environmental problem, because it involves global rather than local effects and is irreversible on a time scale of three centuries or more. In my recent book, I have estimated that scientists' central value of 2½°C for expected global warming by 2050 would imply warming of 10°C by 2300, and their upper-bound value of 4½°C by 2050 would mean 18°C by 2300. Economic damages under even a moderate-central estimate would be at least 1 percent of gross world product (GWP) by 2050 and 6 percent by 2300, and upper-damage cases reach over 4 percent of GWP by the first date and 20 percent by the second. Worse "catastrophic" consequences cannot be ruled out.

Reducing carbon emissions by about one third and holding them constant indefinitely thereafter would avoid the great bulk of this warming and damage. Costs to achieve this outcome could be held low at first, through a move to more efficient energy use and through low-cost carbon savings from afforestation and reduced deforestation. However, by about 2020, the abatement costs could reach some 3 percent of GWP as industrial emissions are curbed, based on several energy-economic-carbon models. The costs would decline thereafter to perhaps 2 percent of GWP, thanks to the advent of new energy technologies.

Cost-benefit analysis provides a basis for economic evaluation of policy toward global warming. This requires two key methodological decisions: what discount rate to use to compare effects over time and how to take risk into account. The discount rate has an unusually powerful influence because of the extremely long time horizon of global warming, and because abatement costs occur early, whereas greenhouse damages avoided (the "benefits" of abatement) show up only after several decades (see chart). I argue that the appropriate overall discount rate should be about 2 percent a year in real terms.

Choosing the discount rate

The debate over what discount rate to use for public policy purposes certainly is not a new one. Even within the United States, a variety of levels can be found (the Office of Management and Budget favors an inflation-adjusted rate of 10 percent a year, whereas the US Congressional Budget Office and General Accounting Office prefer a rate close to the government's borrowing costs—about 2.5 percent real, historically, for long-term government bonds and close to the rate I apply). For a project with a life of five to ten years, the difference is not necessarily large; but for a horizon of 200 years or more, the difference is extreme (see table on page 2).

Conceptually, there are two rates policymakers can call upon: the rate of return on private capital investments (opportunity cost of capital); and the social rate of time preference (SRTP)—or the extra value people place on consumption today rather than in the future. The former tends to be higher (say, 8 percent real) because of project risk, taxation of capital income, and capital market imperfections. The latter tends to be lower. Households are net savers, and the risk-free real rate of interest they can earn on savings is the Treasury bill rate (historically around 0.5 percent real a year).

"Conservative" economists argue that the rate of return on capital is the only one that matters, as the resources devoted to any undertaking could alternatively be placed into private projects where they would earn this rate. However, over the past two decades, mainstream cost-benefit analysis has moved to take both rates into account. In the 1960s, Arnold Harberger, Otto Eckstein, and William Baumol first proposed a weighted average of the two rates, with the weights reflecting how much of a project's resources were drawn from displaced capital investment as opposed to reduced consumption.

Today's state of the art discounting methodology—which I draw upon for my global warming cost-benefit analysis—was developed in the 1970s by Kenneth Arrow, David Bradford, Martin Feldstein, and Mordechai Kurz (the ABFK method). Their approach uses a "shadow price on capital" to translate all capital investment effects (such as the withdrawal of resources from alternative investments) into "consumption equivalents." The ABFK method then discounts consumption over time (including consumption-equivalents of capital effects) at the SRTP for consumption.

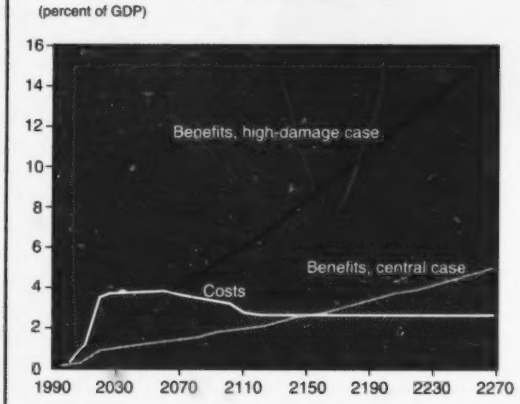
Social rate of time preference. To estimate the SRTP—which I calculate to be 1.5 percent—I appeal to basic economic theory, which states that this rate equals the sum of two components:

• The first is "pure" or "myopic" preference for consuming a good sooner rather than later—myopic, because it implies an inability to envision future pain imposed by robbing the future to increase today's pleasure. Ants have a low pure time preference rate; grasshoppers, a high one. There is a strong tradition among economists to set this preference at zero, especially for comparisons between the present generation and future generations, who cannot participate in today's decisions. "Emotional distance" does not justify pure time preference because it would invite imposing damage on others just because they are not ourselves. Nor do higher consumer borrowing rates constitute empirical evidence on pure time preference; typically, net borrowers expect their income to rise, so their discount rate is based on lower expected future marginal utility of consumption.

• The second is the "utility-based" discount rate, which takes account of declining "marginal utility" as income rises. Just as the third doughnut adds less satisfaction ("utility") than the second, the utility from an extra $1,000 is smaller for an individual at a $20,000 income than for the same individual at a $10,000 income. This component, in turn, equals the product of (1) the growth rate of per capita income and (2) the responsiveness ("elasticity") of marginal utility with respect to consumption—how fast the consumption value of an extra dollar drops off as the individual attains higher consumption levels. For my study, I set the utility-based rate at 1.5 percent. This estimate applies an "elasticity of marginal utility" of 1.5, based on independent calculations by William Fellner and Maurice Scott. It also assumes an average per capita growth rate of 1 percent over the next three centuries. Combined with rising population, even this seemingly modest rate multiplies GWP 25-fold over the horizon, which some would consider incompatible with global resources.

Pay now, enjoy later

Costs and benefits of aggressive abatement of greenhouse warming



Source: *The Economics of Global Warming, 1992.*

Weights. The economic cost of carbon reduction is the sacrifice in output imposed by constraining fossil-fuel energy. This production loss should affect capital investment and consumption in proportion to their shares in the economy at large. I thus assume that the capital investment versus consumption origins of resources diverted to greenhouse abatement equal their economy-wide shares, or 20 percent and 80 percent, respectively.

Shadow price of capital. This I set at approximately 2 (one unit of capital is worth two units of consumption)—consistent with 1.5 percent for the SRTP, 8 percent for capital's rate of return, and a 15-year capital life.

The bottom line. The overall effect is approximately comparable to discounting at 2 percent real (i.e., 1.5 percent x 0.8 for consumption share in resources displaced, plus 1.5 percent x 2 capital shadow price x 0.2 for capital share).

Where does this method lead for greenhouse policy? My central scenario shows that the discounted benefits of limiting global warming would cover only about three quarters of the discounted costs. However, if risk aversion is incorporated by adding high-damage and low-damage cases and attributing greater weight to the former, benefits comfortably cover costs (with a benefit-cost ratio of about 1.3 to 1). Aggressive abatement is worthwhile even though the future is much richer, because the potentially massive damages warrant the costs. This conclusion takes on even more strength if the future is not richer, because then the SRTP should be set at zero.

In contrast, at a discount rate of 10 percent, in the central case the benefit-cost ratio falls from 0.74 to 0.33; and for the high-damage case, from 2.99 to 1.07. Not even risk-averse policymakers would adopt abatement if they discounted the future at 10 percent (unless they added "catastrophic" outcomes).

Broader implications

Certain questions naturally arise in interpreting the method I suggest. First, should the same method apply to both environmental and nonenvironmental projects? Because the ABFK method is mainstream cost-benefit analysis, the answer is yes. My approach is not based on the use of a different underlying methodology for environmental projects and does not mean that these projects should automatically have a lower discount rate than other projects. What matters most is where the resources come from: capital or consumption.

However, under some circumstances, the same method will generate a significantly higher discount rate. Thus, if there is severe crowding out of private investment by additional government borrowing, then a project may primarily displace investment, meaning the effective discount rate would be substantially higher than the SRTP. Moreover, the SRTP itself may be higher if the country's growth rate is high, or its populace is near starvation and has an unusually steep rate of drop-off in marginal utility—both conditions that may be likely in low-income countries.

Another question is: Will not low discount rates cause more environmental damage by justifying more projects? This argument is a

red herring. If project analysis is done properly, it will incorporate the cost of adverse environmental side effects ("full-cost pricing"), and this will tend to rule out environmentally damaging projects.

A third question is: Does not this method imply that society undersaves and underinvests today, considering that the SRTP is well below the rate of return on capital? The answer is yes. However, where society is prepared to undertake more investment, as is arguably the case in global warming, second-best strategy recommends taking action if the cost-benefit results meet the criteria outlined here, rather than opposing action on grounds that something even better might be done with the money (but will not be). Moreover, this approach tends to increase—not reduce—total productive capacity passed on to the next generation.

Finally, does an extremely long horizon mean a lower discount rate? The answer is not necessarily, although it is likely to do so in practice. Per capita growth (and thus the SRTP) over the very long term is likely to be lower than that in the near term. Even the capital opportunity cost approach should apply a declining discount rate over a horizon of centuries, as capital accumulation relative to other production factors will reduce the rate of return on capital.

The World Bank's approach

Former Bank Chief Economist Lawrence Summers (*The Economist*, May 30, 1992) argues for a real discount rate of at least 8 percent in evaluating global warming. There are three possible reasons for this recommendation. First, the mainstream discount methodology yields a rate of 8 percent. Second, the SRTP is irrelevant; what matters is the opportunity cost of capital. Third, because alternative Bank projects achieve such rates, so should environmental projects.

The first of these views would be extremely difficult to defend, because it would require an implausibly high SRTP. Consider 8 percent discounting. Over 200 years, this discount factor reaches 4.8 million to one. Surely, Summers, along with Bank economists Nancy Birdsall and Andrew Steer (in this issue), do not believe society would have been better off over time if today's chairman of the Council of Economic Advisers could have been compelled to give up $4.8 million of consumption to make her bicentennial predecessor (Alexander Hamilton) better off by just one dollar of consumption (at constant prices). Even my SRTP of 1.5 percent means that this tradeoff is $20 to $1, already steep.

As for the second view, for narrow purposes of comparison among Bank projects, this approach may be adequate (with the qualification below). But for society's broad policy toward the greenhouse problem, it seems seriously misleading and imposes a far more stringent test than the mainstream cost-benefit analysis outlined above (e.g., ABFK). Even within this "conservative" position, 8 percent is implausibly high for a 300-year horizon. The rate of return on capital will decline as capital increases relative to labor and natural resources. Today, the Bank invests $15 billion per year. Compounded at 8 percent, just one year's investment of this amount would grow to 100,000 times my estimate of GWP at the end of the horizon! Birdsall and Steer make a modest bow in the direction of recognizing that an 8 percent rate is implausibly high by invoking a possible 5 percent rate to reflect lower investment return in industrial countries, at least for abatement by these countries. However, they do not accept the central point that the rate should take account of resource sourcing out of consumption as opposed to displaced private investment. They thus adhere conceptually to the "conservative" position.

If the Bank authors, however, are merely arguing the third view—that greenhouse and other environmental projects must achieve a return competitive with other Bank projects, then I agree (if the Bank really achieves 8 percent return). The Bank has a limited pool of capital. But in taking the greenhouse problem into account in all its projects, there should be a shadow price penalty on carbon emissions (e.g., from coal-fueled power plants) and a shadow price benefit added for projects that reduce these emissions (e.g., afforestation). This shadow price on emissions should be based on the society-wide cost-benefit analysis of abatement, and thus on the ABFK method with discounting values similar to those outlined above. This analysis would tend to place a price of $10-$20 per ton of carbon initially (the opportunity cost in afforestation or reduced deforestation), rising to $100-$200 per ton of carbon sometime after the turn of the century (and subject to further scientific confirmation). Once the greenhouse gas externalities are counted, it makes sense to require that the project compete with alternative uses of the Bank's scarce funds at the going rate of return. The only exception might be for funds specifically provided by donors for environmental projects, as in the Global Environment Facility.

Instead, Summers, Birdsall, and Steer seem to argue much more broadly that society should do little to limit greenhouse gas emissions. They implicitly counsel that the public would be better off to set aside money in a "Fund for Future Greenhouse Victims." The money would be invested at 8 percent (or, conceivably, at a still high 5 percent), and the income would compensate future generations for global warming damage at a far smaller cost than through limiting emissions.

There are several problems with this notion. First, as just discussed, real rates of return are unlikely to stay as high as 8 percent. Second, we cannot identify producer goods that yield a steady chain of producer goods that at the end of two centuries disgorge consumer goods of relevance to the population at that time (the "intertemporal transfer problem"). Third, we are not sure the damage estimates for global warming truly capture the change in the relative price between goods and environment. How many video cassette recorders will the future generations really consider an adequate compensation for 10°C or more global warming—especially if there is catastrophic risk? Fourth, it is not enough to talk about the possibility of such a Fund; tax revenue would actually have to be collected to implement it. It is unclear that the public will be willing to pay such taxes, whereas considerable public support for stemming global warming was already evident at the 1992 Rio Earth Summit.

Conclusion

So far, the message sent by the World Bank, at least in its *World Development Report 1992*, is that only minimal action on global warming is likely to be justifiable. An improved discounting methodology could change this diagnosis. Environmentalists have come a long way toward accepting economists' arguments, for example, by beginning to embrace tradable permits for emissions. Economists should not discourage this convergence by imposing a more stringent hurdle to action on global warming than would be required by mainstream cost-benefit analysis.

■

"Act Now on Global Warming—But Don't Cook the Books"

NANCY BIRDSALL AND ANDREW STEER

Director, Policy Research Department *Deputy Director, Environment Department and Director,* World Development Report 1992

The World Bank

William Cline's new book provides a thoroughly careful and fully transparent analysis of the economics of global warming—an excellent demonstration of the application of the economist's tool-kit to a pressing policy issue. But his conclusion—that an "aggressive" program of abating greenhouse gas emissions is warranted—rests heavily on lowering the discount rate used in cost-benefit analysis to around 2 percent.

We, too, believe that active policies to address greenhouse warming should be put in place now, but our recommendations do not hinge on such a low discount rate. Moreover, we believe strongly that it is wrong to assume that those who argue for relatively high rates are somehow less interested in the welfare of future generations than those arguing for relatively low ones. On the contrary, we feel that meeting the needs of future generations will only be possible if investible resources are channeled to projects and programs with the highest environmental, social, and economic rates of return. This is much less likely to happen if the discount rate is set significantly lower than the opportunity cost of capital.

We are concerned that the wealth passed on to future generations—in the form of clean air and water, and productive soil and forests, as well as the stock of technological knowledge, educated workers, and physical infrastructure—will be reduced if policymakers routinely accept investments that offer less than the best return. We are also concerned that too low a rate—by changing the ranking of projects—will induce a capital intensive pattern of development, and promote investments with high up-front costs, such as dams, that could be harmful to the environment. The fact that environmental investment has often been woefully inadequate is due to the failure to account for the costs of environmental damage in cost-benefit calculations, not because discount rates have been too high.

Why then do Cline and others argue that we should lower the discount rate when dealing with a subject like global warming? In this article, we will first address the general arguments commonly put forward: that the environment is a special case, and that long-gestating projects demand lower discount rates. We will then address the two specific technical arguments raised by Cline—actually two assumptions that underlie his calculation of the discount rate: that resources required for investing in preventing global warming will come from consumption rather than from existing savings, and that the individual components of the social rate of time preference (SRTP) are such that the SRTP is very low.

The "special case" argument

Should the discount rate for investments in environmental protection be lower than for, say, those on health, education, or food production? Such special treatment is sometimes defended on grounds of uncertainty, potentially large and irreversible impacts, and the "intrinsic" values associated with the environment. We believe that such factors deserve special treatment, but are too important to be handled indirectly through manipulating the discount rate.

Lowering the discount rate is an imperfect and often misleading tool for capturing uncertainty and for dealing with large irreversible impacts—as economists like Partha Dasgupta, Joseph Stiglitz, and J.V. Krutilla have pointed out. In the case of uncertainty, a lower discount rate simply increases the weight we put on risks in the distant future compared to the near future. And, of course, uncertainty can go both ways; unknown technological breakthroughs could greatly decrease the benefits of current investments to reduce later global warming. The problems of uncertainty and irreversibility should be addressed head on through appropriate valuation techniques, and on this score, Cline agrees (as his chart shows, he incorporates uncertainty by adding a "high-damage" scenario).

The "intrinsic" or "spiritual" values associated with the environment also deserve explicit consideration by policymakers. Cline would be the first to admit that his analysis fails to capture these values. The costs of global warming he calculates are economic values (loss of agricultural production, increased need for air conditioning, reduced revenues from ski lifts, etc.). These are valuable calculations, but clearly partial. It would surely be fooling ourselves to believe that by imputing higher values to these future economic costs (by lowering discount rates) we are somehow taking account of the future noneconomic costs that were ignored in the

initial calculations. Economists need to recognize their own limits!

Cline is right in noting that many people today appear to be willing to make sacrifices to prevent global warming that they are not willing to make for child nutrition or soil protection in Africa—seeming to demonstrate a concern for future generations greater than implied by conventional discounting. Part of this apparent "willingness to pay" would disappear if citizens actually had to pay (which they have not yet), and priorities might shift if all available facts were known. But a strong concern about global warming nonetheless remains. It is hard to argue that this stems from a concern about the economic loss of a few percentage points of GDP two centuries from now (when by Cline's calculations, individuals will be seven times richer than we are today). If this were the case, citizens should be equally concerned about policies that promote economic growth over the long term, which would swamp any potential economic impacts of global warming.

The public's present concern is clearly more deep rooted. It may stem from a basic unwillingness to hand over to future generations a greatly altered, or "polluted," natural world, an unwillingness that transcends the economic impacts of such pollution. Policymakers can get some help from economic analysts in assessing the importance of such values; carefully designed contingent valuation (questionnaire) exercises and a recognition that these are values to people alive today (and thus do not need to be discounted) can help disentangle economic from noneconomic values. A complementary approach is to incorporate noneconomic values through participatory decisionmaking after the strictly economic costs and benefits have been calculated and made public. But in neither case is it necessary or helpful to lower discount rates.

The "long horizon" argument

Cline does embrace another common argument for low discount rates—that when, as with global warming and other environmental projects, an investment yields returns far into the future, a high discount rate makes no sense. By using a zero rate of pure time preference and assuming low long-term world growth rates in his calculation of the SRTP, he in effect argues that the discount rate should be adjusted to take into account the long gestation of global warming projects.

In reality, however, the line between quick- and slow-return projects is impossible to draw. All good projects benefit future generations—either directly or through reinvestment. Educate a girl in Africa today; the yield will begin immediately, but the full benefits will not yet be experienced one hundred years from now. Similarly, investment in technology in the eighteenth century enabled Europe's prosperity today, and investment in US railways and agricultural universities a hundred years ago made possible America's agricultural productivity today. We would thus argue for the same discount rate for a long gestating project as for a series of shorter gestating projects. Cline caricatures our view as arguing for a "Fund for Greenhouse Victims," implying an all-or-nothing decision at the outset between global warming avoidance or other types of investment. In the real world, the menu of options is richer—and each option deserves careful and equal treatment.

"Consumption matters" argument

How does Cline arrive at his 2 percent discount rate for global warming? He begins noting that the discount rate is a weighted average of the "capital share displaced," which incorporates the opportunity cost of capital and the "consumption share displaced," with the weights depending on whether resources come from consumption or other investment. (Cline's assumed SRTP is an input to *both* of these shares.) He then argues that the capital share deserves little weight since most (80 percent) of the resources society would allocate to reduce global warming would come from consumption not investment. His thinking runs as follows: people will not agree to pay taxes to finance more education or better roads—in other words, the overall level of investment is socially suboptimal. But because they are nervous about global warming, they might agree to some sort of controls on emissions, or even to taxes on emissions (which, in fact, by reducing GDP growth would ultimately tax them and their descendants anyway—and with a lower expected benefit than the tax on education). He thus argues for a *lower* discount rate for global warming than for, say, schools or roads.

We have no problem with the formula—that is, with the concept of incorporating the SRTP into the consumption share and capital share, which as Cline notes is now in the "mainstream" of economic theory. But we disagree with the weights used for the two shares, because we believe it is the capital share displaced that matters for purposes of allocating scarce investment resources—and allocating scarce resources is always the central problem. (What this means is that the discount rate calculated from the formula, with full weight to the capital share displaced, is conceptually equivalent to the opportunity cost of capital.) Another way to put the same point: it is the economist's job to assess the net benefits of an investment, telling policymakers where investment resources will yield

the highest return—not to assume *a priori* how society will finance investment choices.

This is why at the Bank, the starting point for the choice of discount rates used in project analysis is the opportunity cost of capital in borrowing countries, a criterion that does not vary depending on the investment financed. Since a dollar used to finance investment "A" cannot also finance investment "B," the rate of return to a potential investment must be compared with alternative high return uses (taking into account environmental and social, as well as economic, factors)—or limited investment resources will be used poorly.

As a result, Bank-financed investments in roads, sanitation, education, environment, agriculture, and energy must pass a cost-benefit test applying discount rates in the order of 8–10 percent. We do accept that the opportunity cost of capital (and thus the discount rate for investment decisions) in industrial countries may be lower than the rates common in developing countries. Thus to the extent that investments in preventing global warming substitute for consumption or investment benefiting rich countries, a lower rate should be used (e.g., the 5 percent "test discount rate" used by the British Government).

A final point: although Cline concedes that in assessing how to allocate investment among competing uses it is the opportunity cost of capital that matters, he goes on to argue that in calculating the stream of costs and benefits from greenhouse projects, the shadow price on carbon emissions should be computed using his 2 percent discount rate. But it is logically inconsistent to calculate the shadow price at one discount rate and then calculate the present value of the project at another. Why should the monetary value of the externality used in calculating the shadow price be discounted at a different rate than other resources generated or consumed by the project?

"Low time preference" argument

The second factor underlying Cline's 2 percent discount rate is his use of an SRTP of 1.5 percent—which is the summation of a "pure" rate of time preference (which he sets at zero) and a discount of 1.5 percent based on the assumption that incomes will increase over time and our descendants will be better off than we are. If the only thing that really matters is the opportunity cost of not investing in higher return projects, the calculation of the SRTP is irrelevant. But for the sake of argument, let us examine this figure.

First, the "pure" rate. Cline's zero level is attractive, since it recognizes that we should take great care in making decisions that will affect future generations, who cannot participate in those decisions. Indeed, it builds in directly the notion of "stewardship"; we do not want to discount posterity's interests at all—not even to the extent we might discount our own future consumption (e.g., anticipating some probability of our own death cutting off future consumption benefits). But a zero rate implies I care as much about my and your descendants in the year 2300—about ten generations from now (within the time horizon Cline says should be considered)—as I care about the more than one billion people living today in poverty in developing countries. In terms of "emotional" proximity, are we sure that we would not rank higher an improvement in the welfare of children in Somalia today than an increase in the welfare of our descendants who might be living in the year 2300?

Moreover, there is another way to look at the issue. Consumers in developing countries are willing to borrow at high real rates of interest, higher than 10 percent, reflecting the tradeoff they see between current and future consumption for themselves. Cline maintains that the interest rate on consumer saving, not borrowing, better reflects time preferences, because the former is not affected by taxes and other distortions that drive up the cost of capital. But the fact remains that many of the poor in developing countries value current consumption highly—perhaps because they are poor and the marginal utility of additional current consumption is very high. Should we ignore this evidence?

Second, what about Cline's discount for future income growth? He assumes long-run future income growth per capita of 1 percent. But in the past four decades, such growth in the industrial and developing worlds has been 2 percent a year per capita. Furthermore, in Germany, Japan, and the Republic of Korea, per capita growth has been far greater, averaging more than 5 percent a year in the latter two over more than two decades. Predicting long-term growth rates is a tricky business; the World Bank has been overoptimistic in projecting income growth in Africa. However, in choosing between projects that would benefit Africans (e.g., education versus reduced global warming), does Cline really want us to assume that income growth will only be enough to provide the average Malian with an income of $2 a day in 2050?

What then is the right SRTP? We do not know, but we think it could be higher than 1.5 percent. If it is, then the appropriate discount rate would be greater than 2 percent. In fact, if we assume per capita income growth of 2 percent, a pure rate of time preference of 1 percent, and all of a project's resources potentially being used for other investments, the discount rate, using Cline's method, would be 8 percent. (As the reader should see, we thus have no argument with the formula for the SRTP itself—only with the weights Cline uses and his numerical assumptions in applying the formula to global warming.)

A strategy for global warming

We agree with Cline that active steps to address the possible costs of global warming should be put in place now. In fact, Cline's "aggressive" program for the next decade is not much different from that spelled out in the *World Development Report 1992*. The threefold strategy over the short term includes:

- adopt policies that can be justified for reasons in addition to their beneficial impact on global warming: eliminate energy subsidies, adopt modest carbon taxes (especially in countries with low energy taxes), and invest in afforestation and agroforestry;
- embark upon an aggressive program of research to reduce the uncertainty surrounding the problem and find solutions; in rich countries, of all public energy research funds, only 4 percent go to renewable energy;
- support the search for solutions in developing countries; rich countries should help poorer ones enjoy rapid economic growth while keeping greenhouse emissions low (e.g., through the Global Environment Facility).

Apparent differences with Cline arise mainly over his specific proposals on what to do starting a decade from now. For example, Cline recommends a tax of $100–$200 per ton of carbon "sometime after the turn of the century," but he qualifies this by saying the recommendation should be "subject to further scientific confirmation." This puts him in a similar position to the Bank, which, as the *WDR 1992* makes clear, also believes that over the longer term, as evidence accumulates, a stronger response may be warranted (e.g., international tradable permits for carbon emissions). We thus think Cline exaggerates the contrast between his and the Bank's position: his argument contrasting an "aggressive" policy to what the Bank now advocates is a "tempest in a teapot."

In sum, our difference with Cline arises over a principle rather than specific measures: while awaiting scientific confirmation, we think it will harm future generations to use low discount rates to justify locking in low-return investments. Indeed, if we are to make genuine progress in addressing the huge challenges of sustainable development, every investment will need to earn its way. As the Bank's former Chief Economist has noted in the article to which Cline refers: once costs and benefits are properly measured, it cannot be in posterity's interest for us to undertake investments that yield less than the best return. There is no need to cook the books. ■

Portfolio Investment Flows to Developing Countries

MASOOD AHMED AND
SUDARSHAN GOOPTU

Portfolio investment flows have recently been the fastest growing form of external finance for developing countries, accounting for one fifth of all capital flows to the developing world. Currently, these flows are heavily concentrated in a handful of economies (mainly in Latin America). But the potential for their expansion to other countries is theoretically enormous—although it is likely to be limited, in practice, by investor perceptions of country creditworthiness and limited investment opportunities in still generally small emerging markets.

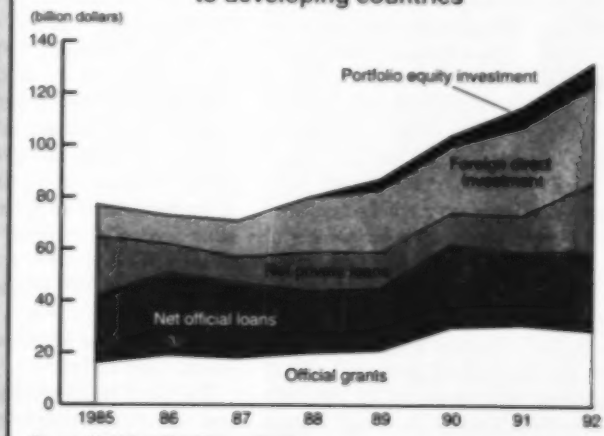
The past three years have witnessed an unprecedented increase in private portfolio investment flows to developing countries, increasing from $7.6 billion in 1989 to $20.3 billion in 1991, and are estimated to have reached over $27 billion in 1992. According to data in the World Bank's *World Debt Tables 1992–93*:

Aggregate net resource flows to developing countries

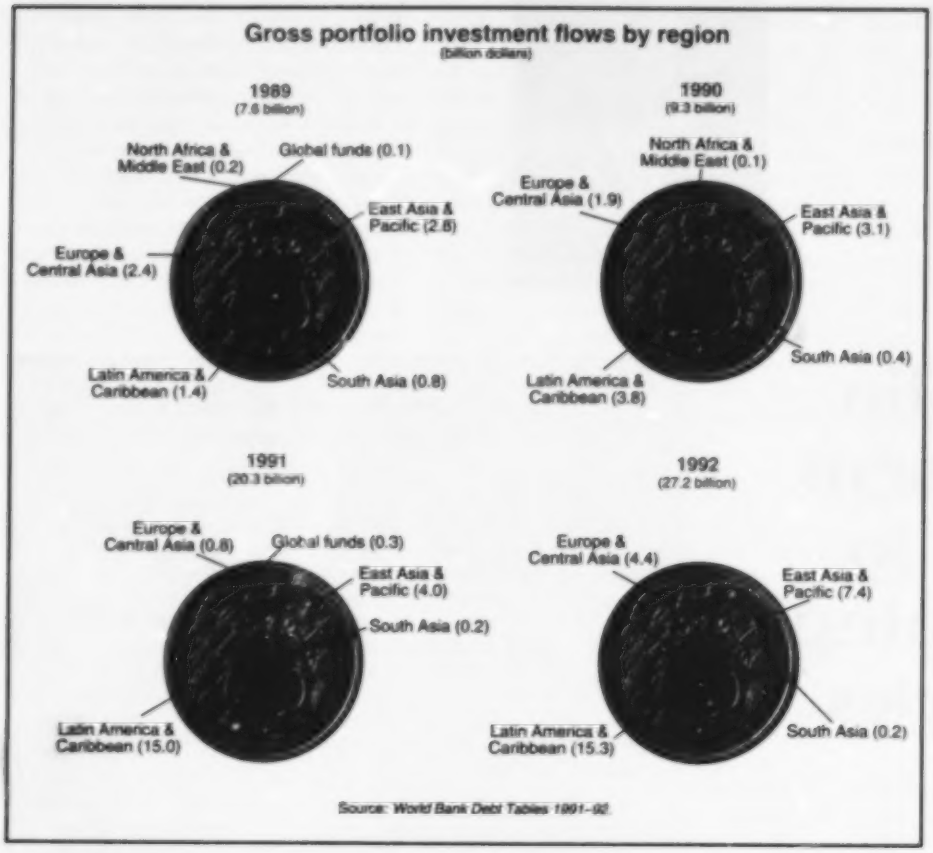
Aggregate net resource flows to developing countries increased by 17 percent in 1992 over the previous year and the pattern of external finance changed significantly. Of the $134 billion in real aggregate net resource flows that took place in 1992, foreign direct investment (FDI) and portfolio investment accounted for the bulk of the increase over previous years. Most of these flows were directed to the middle-income countries ($89 billion), with flows to low-income countries remaining broadly unchanged ($44 billion) in 1992. The large increase in flows to middle-income countries (130 percent over the previous year) stemmed mainly from the upturn in private flows. In addition, within these flows there has been a shift from debt to equity financing, comprising FDI and portfolio investment, and from bank to nonbank sources. Most low-income countries, especially those severely indebted, remain heavily dependent on official financing.

Thus, while there are legitimate concerns about the volatility and sustainability of some portfolio flows, developing countries that are receiving these flows can maximize their benefits by taking a variety of steps. These include: (1) listing at least a few stocks internationally; (2) strengthening supervisory and regulatory policies; (3) conforming to generally accepted accounting and disclosure standards; (4) ensuring investor protection; and (5) improving the efficiency of settlement and clearing procedures. Regulatory changes in industrial countries that ease entry restrictions into their securities markets (such as the US SEC Ruling 144A) without jeopardizing prudential standards are encouraged.

Real aggregate net resource flows to developing countries



Source: *World Bank Debt Tables 1991-92*.
Note: All flows are deflated by the import unit value index (IMF, WEO) at constant 1992 dollars. 1992 deflator is a World Bank staff estimate; data for portfolio equity investment are World Bank estimates, available since 1989 only.



• Portfolio equity investment (comprising external stock offerings in the form of depository receipts, country funds, and direct equity purchases by foreign investors) increased 15-fold, from $0.4 billion in 1989 to over $6.0 billion in 1991, and are estimated to have reached $5.2 billion in 1992.

• International bond financing by developing countries, which started from a stronger base in the late 1980s, also showed remarkable growth in 1991–92, accounting for nearly $20 billion of gross inflows in 1992 (see charts).

The recent surge in portfolio flows is of interest to developing country policymakers for a variety of reasons. First, as part of a broader resumption of private market financing, these flows signal the return to market access after the decade of the debt crisis for a number of mainly middle-income developing countries. Second, the very different nature of these flows—compared with the syndicated bank lending of the 1970s and the early 1980s—reflects important structural changes that have taken place on both the borrowing and lending sides over the past decade. These changes include the growing importance of institutional investors as the source of long-term finance, even as commercial banks have cut back their activities in this area. And in the developing countries themselves, there has been a parallel movement away from public sector dominated borrowing to a more balanced mix of access to foreign capital by private corporations and sovereign borrower alike. Portfolio equity flows also help to reduce the cost of capital for companies in emerging markets and introduce an important element of risk sharing between international investor and host country.

The short three-year history makes it difficult to extrapolate the future magnitude and behavior of portfolio investment flows. But the observed rapid increase in these flows to developing countries has given rise to some legitimate concerns on the part of policymakers in the recipient countries as well as those in other developing countries who wish to benefit from this experience in an endeavor to attract and deal with similar portfolio investment inflows from abroad without jeopardizing their adjustment efforts and domestic policy agenda.

The portfolio investment flows have, however, been concentrated in a few countries, primarily in Latin America. Five countries—Argentina, Brazil, Mexico, South Korea, and Turkey—accounted for over two thirds of the cumulative total gross portfolio investment flows between 1989 and 1992. Mexico, which led the process of restoring access to voluntary financing by previously debt-distressed countries, was the largest recipient of both portfolio equity and bond financing flows. Moreover, most of the increase in the supply of private funds went to private borrowers, especially "blue chip" companies that have a good credit rating in their own right in international capital markets.

Portfolio investment, as distinct from foreign direct investment (FDI), comprises financial instruments that can be acquired by foreign investors either in the international securities exchanges, the US private placement market, or through direct purchases in the developing country's stock market. These instruments can be classified in two groups: equity and debt instruments (see box for details). Country Funds accounted for the bulk of the portfolio equity flows in 1989 and 1990, partly because in several developing countries, they were the only permitted instrument for foreign investors. Their importance has declined more recently as many countries have relaxed restrictions of foreign equity investment and as investors themselves have become more interested in picking individual stocks rather than a slice of the overall market. At less than $200 million, the value of new emerging market funds launched in 1992 represents less than one tenth of the corresponding figure two years earlier.

American Depository Receipts (ADRs) have grown in popularity for many of the same reasons that led to a declining interest in country funds. There are currently more than 800 ADR programs in the United States and capital raising through ADR issues accounted for some $10 billion in 1992. The growth in ADRs was greatly facilitated by rule 144A of the US Securities Exchange Commission (SEC), which has enabled this instrument to be used by a number of smaller, first-time foreign issuers in the US equity market.

In terms of debt instruments, Mexico became the first debt-distressed country to raise voluntary financing from abroad since the debt crisis, with an unsecured international bond issue of $100 million in June 1989. Since then, Argentina, Brazil, and South Korea have also tapped the international bond market extensively and bond issues now account for the largest share (about two thirds) of portfolio in-

vestment flows to developing countries.

Commercial Paper (CP) issues have also increased drastically in the 1990s as more and more firms that are unable to raise longer-term financing turn to this vehicle. Maturities are generally of 3, 6, and 12 months, although note issuances of shorter maturities of a few days are not out of the ordinary. About $1.4 billion of CP issues were made by entities in developing countries in 1991, of which $1.2 billion was issued by those in Latin America alone.

The investors

Much of the initial growth in portfolio investment was financed by returning flight capital. Domestic nationals with substantial overseas holdings also continue to be a major investor category, particularly for portfolio flows to Latin America. But these individual investors have been joined by a more diverse—and potentially much bigger—group of institutional investors. These institutional investors, which include pension funds and life insurance companies, are motivated primarily by the portfolio diversification benefits that accrue from investing a small part of their large overall holdings in developing country obligations. They generally have a longer-term investment horizon and look for stability and long-term growth prospects in the market in which they invest. Recent research has shown that even though developing country stock markets are more volatile than developed markets, they have not been found to be correlated with one another or with developed markets. Global institutional investors will, therefore, lower their portfolio risk by diversifying their portfolios into these emerging markets.

To date, institutional investors have allocated only a small fraction of their investible portfolio to these markets, especially in countries such as Chile and Mexico, which have a favorable track record of domestic policy reforms. These institutions have typically invested less than 5 percent of their foreign equity holdings in developing country equities (which is less than 0.2 percent of their total asset portfolios). There is considerable variation across institutional investors, with some investing as much as 6 percent of their portfolio in emerging markets and others not investing in them at all.

As of the end of 1991, pension funds and insurance companies had an estimated $12–15 billion invested in emerging market stocks (which was about 3 percent of the market capitalization of all emerging stock markets combined at the time). US institutional investors appear to favor Latin American securities, UK institutions seem to favor portfolio investments in the Far East, while Japanese institutional investors appear to favor Southeast Asian securities.

Other actors in the market include:

- ***managed investment funds*** (closed-end country funds and mutual funds—see box), whose portfolio managers buy and sell high-yield instruments in one or more emerging markets for trading activity geared toward achieving a portfolio yield that is better than some benchmark (the Standard & Poor's 500 index, for example);
- ***foreign banks and brokerage houses***, who allocate their own portfolios for inventory and trading purposes; and
- ***retail clients of Eurobond houses,*** who are involved in emerging securities markets for portfolio diversification motives.

Why the rapid increase?

The reasons behind the sharp growth in portfolio investment flows have been the subject of vigorous debate among academic economists and policymakers. Some explain the increase primarily in terms of the "push" effect of the unusually low interest rates prevailing in the United States, arguing that the boom in flows coincided with a sharp decline in US interest rates and the drying up of the so-called junk bond market, which offered investors a domestic alternative in the high risk/high return arena.

Other analysts emphasize the "pull" of investment opportunities in the emerging markets themselves. They point to the wide ranging economic reforms that a number of Latin American countries have undertaken in the aftermath of the debt crisis; these reforms, coupled in several countries with commercial debt-reduction agreements, have generated greater investor confidence in the growth and creditworthiness prospects for these countries. They also cite the steady access of East Asian economies to bond financing in the period before international interest rates declined in the late 1980s.

As is often the case, the true explanation lies in a combination of the two. The decline in interest rates in home markets certainly provided an added impetus to investors searching for high-return instruments to look at the very attractive yields available in both fixed-return and equity investments in emerging markets. Lower interest rates in the United States also improved the short-term creditworthiness indicators of developing countries by reducing their debt-service obligations. But lower interest rates or other supply side factors do not explain why portfolio flows have not been dispersed randomly to all emerging markets, or why countries such as Mexico, with an established track record of sound economic management, are able to

The instruments

The instruments through which portfolio investment takes place can be classified in two groups: Equity instruments and debt instruments. Equity instruments include:

Country Funds, which allow foreign investors to pool resources and invest in the emerging stock markets in, for example, Brazil, Chile, India, South Korea, Mexico, and Thailand. Funds can be invested in all emerging markets (through global funds), in specific regions (Regional funds), or in specific countries (country funds). Closed-end funds make an initial share offering for public trading on organized exchanges but are not redeemable unless the fund is liquidated or changed (with stockholders' consent) to an open-ended fund (or mutual fund), which can issue and redeem shares to meet investor demand.

American Depository Receipts (ADRs), which are negotiable equity-based instruments, issued by a non-US corporation, publicly traded in the US securities markets and backed by a trust containing shares of the corporation. ADR holders have the same rights, including voting rights, as if they held the underlying shares.

Global Depository Receipts (GDRs), which are similar to ADRs but can be simultaneously issued in securities exchanges all over the world.

Direct purchase of shares by foreign investors, which, where permitted by developing country governments, is increasingly important in attracting resources from abroad.

Debt instruments include:

International bond issues, which have been a steady feature of developing country financing for many decades, but which were displaced by the growth in syndicated bank loans in the 1970s and early 1980s.

Commercial Paper (CPs), which are short-term instruments that have been issued by entities in developing countries in the Euromarkets and in the United States.

Certificates of Deposit (CDs), which have also been used by developing countries to raise resources in the international markets.

issue bonds at 300 basis points below the rate required by investors of comparable bond issues in other developing countries.

In the case of equity flows, the recent growth has also been facilitated by institutional changes in developing and developed countries that have taken place in light of the widespread efforts toward global integration of securities markets and increasing financial deregulation measures. In the industrial countries, developments such as US SEC Rule 144A, which allow foreign issuers easier access into the US securities markets largely by easing restrictions on the resale of privately placed securities, have simplified trading in foreign equities by eliminating costly settlement delays, registration difficulties, and dividend payment problems. The recent raising of ceilings on foreign investment imposed by the New York State regulator of insurance companies has also helped increase cross-border trading with some emerging stock markets. (Other countries—notably Germany—have much more binding ceilings on the fraction of assets that pension funds and insurance companies can invest abroad.)

Developing countries, too, are doing more to encourage foreigners through fewer regulatory restrictions, better settlement and clearance, and reduced taxes and fees on transactions. For example, in South Korea, the Securities Supervisory Board relaxed the registration procedures for foreign institutional investors, individuals, and corporations in March 1992. In India, the government has announced plans to abolish the Office of the Controller of Capital Issues and firms will be able to determine the pricing and timing of new issues, including share issues abroad, and to arrange joint ventures. In some markets, such as Chile, Hong Kong, Singapore, and Taiwan Province of China, domestic institutional investors (pension funds and social security administrations) have played an important role in developing capital markets.

Gross portfolio investment flows

	1989	1990	1991	1992 (est.)	Total 1989-92
Portfolio equity investment	3.5	3.8	7.6	8.2	23.0
Of which:					
Country funds	2.2	2.9	1.2	0.6	6.9
Depository receipts	0.0	0.1	4.9	5.6	10.7
Direct equity investment	1.3	0.8	1.5	1.9	5.4
Bonds, CPs, and CDs	4.1	5.6	12.7	19.1	41.5
Total	**7.6**	**9.3**	**20.3**	**27.3**	**64.5**

Source: World Bank, *World Debt Tables, 1992-93.*
Note: Excludes "New Money Bonds" that were issued in Brady-type debt and debt-service reduction operations.

Policy issues

While policymakers in recipient countries have generally welcomed the substantial inflows of portfolio investment, they have also come to recognize that these flows pose significant issues of both macroeconomic and financial sector management. At the macroeconomic level, the main concern is how to deal with the effects of sudden large capital inflows and the possibility of equally sudden outflows in terms of real exchange rate fluctuations or the monetary implications of substantial changes in reserve levels. Some economists have argued for a tax to discourage speculative short-term inflows or other measures to offset the expansionary impact on the money supply; others caution against any action that might also discourage genuine investors and would be difficult to apply in practice. Preliminary evidence on the major Latin American recipients of portfolio flows shows that although country responses to these large portfolio investment flows have been varied, the general tendency of policymakers has been to regard these inflows as temporary. As a result, these countries have tried to limit the extent of real appreciation by intervening in the foreign exchange market or by sterilizing part of these inflows by issuing domestic debt.

At the financial sector level, one important issue is whether allowing foreign investors into small equity markets might exacerbate volatility or "overheating" (artificial increases in market capitalization as a result of sharp increases in the prices of the shares of a few companies that are traded internationally on the developing country stock markets). Financial policymakers are also worried about the potential dislocation that might be caused by a subsequent precipitous withdrawal by foreign investors for reasons beyond the host country's control.

These concerns reflect the nascent state of many emerging markets and weaknesses in the regulatory framework under which they operate. Despite their rapid growth, emerging markets—with a capitalized value of near $650 billion—account for only about 6 percent of industrial country stock markets. A result of a limited supply of stocks of corporations with large market capitalizations, most emerging equity markets also remain relatively illiquid and have a high concentration (the ten largest stocks account for over 30 percent of market capitalization in most of these markets; the comparable figure for the United States is 15 percent). Moreover, these markets have been quite volatile, with plus or minus 50 percent annual changes in market indexes in a number of markets during a given year. Some of these factors can only be addressed as these markets mature, but steps can be taken to address some issues now. For example, the recent stock market riots in China and irregularities in India's stock market have shown that there must be better regulation, registration, and monitoring of stock market transactions.

Accounting practices and disclosure requirements must also be raised in many cases and insider trading remains an issue of serious concern to both foreign and "outsider" domestic investors. To contain the disruptive effects on the domestic financial system of any sudden withdrawal of foreign investors, consideration should also be given to limiting the role that banks are allowed to play in equity markets, or the extent to which equity assets can be used as collateral for bank lending. Finally, it would be useful to assess ways to increase the involvement of large institutional investors, who typically have longer-term investment objectives in the financing of portfolio flows. The way to achieve this lies in a sustained and demonstrated commitment to sound economic management and financial sector regulation at the national level. ■

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GUEST ARTICLE

Foreign Direct Investment in the United States

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In current dollars, the average annual inflow of direct investment into the United States during 1985–90 was more than five times as large as in 1975–80. After decades as the leading source country for outward direct investment, by the mid-1980s the United States had replaced Canada as the world's number one host country in total value of foreign-controlled business activity.

As a consequence of the investment boom of the 1980s, foreign companies now play a prominent part in the daily lives of Americans. When a US consumer buys a new car, shops in a department store, or checks into a hotel, chances are increasingly good that the supplier will be the local subsidiary of a company based in Europe, Japan, or Canada. The same is true when a US business rents office space, purchases components, or applies for a bank loan. This article discusses the reasons for the growth of foreign direct investment in the United States, the concerns raised by the increase, and its impact on the US economy.

What happened?

The rapid inflow of direct investments (those providing foreigners with at least 10 percent ownership in a US business) during the 1980s occurred in the context of an explosion in international trade in all types of assets. For several decades, US investors had dominated international financial markets as both lenders and borrowers, with a modest net capital outflow in most years.

In the 1980s, the United States abruptly became a net borrower on a scale that was unprecedented for any nation. However, only a fraction of the rise in total capital inflows came in the form of direct investment. Even in 1989, when direct investment inflows reached a peak of more than $70 billion, this constituted less than a third of total capital inflows for the year (Table 1).

The impact on US economic performance of increased foreign ownership and control is different from that of other capital inflows (a major part of the total was purchases abroad of US Treasury securities and increased foreign deposits in US banks), and the motive for direct investment is likewise different. The flood of direct investment into the United States is thus a phenomenon that needs to be examined separately from the much bigger rise in US net borrowing.

Most economists see the rise in net borrowing as the result of overall macroeconomic forces; when aggregate US saving (private saving less the government deficit) falls short of aggregate domestic investment, the nation necessarily borrows the difference abroad. In contrast, direct investment is basically a microeconomic phe-

Foreign investment in the United States

Balance of payments inflows

	Total	Foreign direct investment (FDI)	FDI as percent of total
1960	2.3	0.3	13.7
1970	6.4	1.5	23.0
1972	21.5	0.9	4.4
1974	34.2	4.8	13.9
1976	36.5	4.3	11.9
1978	64.0	7.9	12.3
1980	58.1	16.9	29.1
1981	83.0	25.2	30.3
1982	93.7	13.8	14.7
1983	84.9	11.9	14.1
1984	102.6	25.4	24.7
1985	130.0	19.0	14.6
1986	221.6	34.1	15.4
1987	218.5	58.1	26.6
1988	221.4	59.4	26.8
1989	216.5	70.6	32.6
1990	86.3	37.2	43.1

Source: *Survey of Current Business*, August 1991 and earlier issues.
Note: Percentages calculated from unrounded flow data.

nomenon driven by competitive conditions in particular markets. To understand the causes of the surge in inward direct investment, we must therefore examine the motivation of individual companies.

Why foreign direct investment?

To understand why foreign firms have been buying and building US operations, it is helpful to look at direct investment as an integral part of a firm's overall strategy for global production and sales. At one level, it should not be surprising that successful firms expand their operations. When that expansion crosses a national boundary, it becomes—by definition—foreign direct investment. Yet many firms sell abroad without undertaking direct investments, and in any case, investment abroad is not necessarily the most profitable avenue for increasing foreign sales. In fact, a foreign firm is almost always at some disadvantage in operating away from its home base. A company's decision to invest in the United States thus raises two questions: (1) why does the firm choose direct investment over other strategies, and (2) how is the foreign firm able to compete successfully with US companies already established in the domestic market?

Modern theories of foreign direct investment suggest that a firm will want to establish a US subsidiary only if it enjoys a firm-specific competitive advantage over its rivals and if that advantage is most profitably exploited through managerial control over operations in multiple countries. Direct investment in the United States can be a viable strategy only if the advantages outweigh the disadvantages vis-à-vis established US-based competitors. The rapid growth of US imports and of inward direct investment can thus be viewed as two aspects of a single phenomenon—both reflect the increased global competitiveness of corporations in Europe, Japan, and Canada relative to their US-based rivals.

Empirical studies show that direct investment activity in manufacturing is clustered in industries where research and development (R&D) and advertising expenditures are important—examples for the United States include electronics, chemicals, pharmaceuticals, and processed foods, as well as the much-publicized automobile industry. R&D and advertising expenditures presumably create competitive advantages that allow firms to operate profitably in a foreign environment. But firms' competitive advantage can in many circumstances be better exploited through exports from the home country. An additional requirement for setting up US operations, therefore, is that it must offer some locational advantage. Otherwise, the potential investor is likely to choose exporting over the more costly and risky option of establishing a US subsidiary. During the 1980s, increased protection and a decline in the relative cost of US labor helped to tip the balance in favor of a US location for Japanese auto producers. Previously the same markets were served by exports. The Free-Trade Agreement between the United States and Canada that went into effect in 1989, as well as its pending expansion to include Mexico in a North American Free Trade Area, have given further boosts to the region's advantages as a production location.

Even given a competitive advantage and a locational advantage, the investing firm must also anticipate an organizational advantage from extending its managerial control across a national boundary. The underlying motives for foreign direct investment are essentially the same ones that promote expansion at home. But because international expansion is typically more expensive, the anticipated benefit needs to be large enough to offset the higher cost. Otherwise the firm will prefer an arm's-length alternative such as licensing.

Enhanced opportunities for tax avoidance are a much-cited potential benefit of multinational operations, although the size of the benefit is difficult to gauge. The key tool here is the transfer price—the bookkeeping price at which a good or service is "sold" by one unit within the firm to another. Firms use advantageous transfer prices to increase global after-tax profits by shifting reported profits between tax jurisdictions. This is a longtime practice of US-based multinationals. Now the counterpart activity of foreign companies operating in the United States has begun to attract attention. Some officials charge that foreign corporations are benefiting from access to the US market without paying an appropriate share of US taxes. Through stricter enforcement of US tax laws, the Clinton administration hopes to raise taxes collected from foreign corporations by as much as $45 billion over four years. However, tax specialists believe a crackdown on abuses of transfer pricing would yield only a fraction of that, and also runs the risk of discouraging new investors.

US worries

While the domestic economy was strong, the United States worried mainly about large, but somewhat vague, consequences of increased foreign ownership. Heading the list was loss of control over domestic economic activity—loss of economic sovereignty, in the usual phrase—and an associated potential threat to national security. These large issues have remained contentious in the 1990s environment of low growth and high unemployment, but the debate has refocused on specific concerns of those directly affected.

The prominent issue is jobs—more precisely, what happens to American employment and wages when a foreign company gains control of a US business. Less often raised explicitly but intimately related is what happens to profits of US-controlled companies.

The United States also worries about the nation's trade. As with competition from imports, beleaguered domestic firms are apt to label activities of their foreign-controlled US rivals as unfair and detrimental to the national interest. Just as the recession of the early 1990s brought forth new calls for aggressive trade policies, critics of foreign direct investment found a host of new reasons to limit the role of foreign companies within US borders.

But the recession also increased the zeal of those who favor an open-door policy toward new foreign investment. Indeed, with trade performance sagging and many US regions and industries experiencing near-record unemployment, states and cities dispatched missions abroad in active pursuit of investors who would, it was hoped, create jobs and boost in-

dustrial competitiveness. The competition to attract foreign investors has, in fact, spawned a new worry. With so many states and cities bidding for investments with special incentives, the benefits might well be shifted in favor of foreign firms and away from US workers, investors, and taxpayers.

Another concern is how these investments affect America's technological edge. Does foreign ownership help to boost US productivity and restore the vigor of US business, or, on the contrary, do direct investments aid foreign companies in their quest for access to US technology in leading-edge products like computers and aircraft?

Foreign direct investment in the United States
Balance of payments inflows for major investing countries

	Total, all countries	United Kingdom	Japan	Netherlands	Canada	Germany	Switzerland
1985	19.0	4.7	3.4	2.8	0.9	2.3	2.7
1986	34.1	10.8	7.3	4.4	2.5	2.0	1.4
1987	58.1	25.3	8.8	8.5	3.7	4.4	3.0
1988	58.4	21.0	17.3	5.8	1.2	2.4	0.8
1989	70.6	18.9	17.4	7.3	3.2	3.8	4.7
1990	37.2	3.7	17.3	7.1	0.0	-0.9	-1.0

Source: *Survey of Current Business*, August 1991 and earlier issues.

Impact on US capital and labor

From a global perspective, unimpeded movement of capital (unfettered competition between foreign-based and US-based firms), like free trade, is desirable because it promotes an efficient allocation of productive resources worldwide. But Americans are increasingly fearful that a *laissez-faire* policy toward investment may create benefits abroad at the expense of economic well-being at home.

Because ownership of US operations is a way for highly competitive foreign firms to enter the US market, its most predictable effect is to reduce profits of other firms (domestic and foreign) already in that market. But new entry can also affect profits of firms that do not compete directly, through changes in demand for intermediate goods and productive inputs, and through changes in tax revenues and public expenditures. In the longer run, foreign ownership can even influence the legal structure within which the industry operates, as new owners lobby on legislative and regulative issues.

Increased employment is the benefit most eagerly sought by host regions, yet the impact of direct investment on employment and earnings is complex. Direct investment influences aggregate employment and earnings mainly through enhanced productive efficiency. Both theory and empirical evidence suggest aggregate employment effects are minor, although there may be larger sectoral or regional impacts.

Localities want foreign investment because it creates "new jobs." But overall demand for a given product is unlikely to rise significantly as a consequence, even when foreign investment entails construction of new plants. Any new jobs, therefore, mainly replace others lost either abroad or at home, depending on whether output from a new plant substitutes chiefly for foreign or for other domestic production. If foreign jobs are replaced, employment in that US industry might rise, but as displaced foreign workers move into other sectors, global demand for other US products will tend to fall.

Even in a given industry, substitution of jobs will not be one for one if the investor's competitive advantage includes higher efficiency in production. Empirical results suggest that foreign owners in the United States pay roughly the same wages as domestic owners in the same industry but have higher output per worker. The number of jobs in the industry nationwide is thus likely to fall unless much of the new production replaces US imports or augments exports. And even if total US production in the industry rises, on average foreign-controlled producers use a higher percentage of imported intermediate inputs. This can mean job losses for workers in the domestic industries that produce these inputs.

"From a global perspective, unimpeded movement of capital (unfettered competition between foreign-based and US-based firms), like free trade, is desirable because it promotes an efficient allocation of productive resources worldwide."

Although the effect on US labor is complex, at least wages and employment can be observed directly. This is not true for technology. Developing countries' efforts to attract foreign investments reflect a presumption that multinationals provide a channel for transfers inward of advanced technology from abroad. The same hope is expressed by many US officials and corporate leaders. The problem is that technology transfer is a two-way street. Critics of a *laissez-faire* policy toward inward direct investment worry that investments can serve as listening posts, facilitating the dissemination to foreign-controlled companies of proprietary US technologies. The Clinton administration has promised tougher scrutiny of proposed investments in high-technology sectors.

What role for the United States?

The greatly increased extent of two-way foreign direct investment has blurred the distinction, at least among industrial nations, between host and source countries. In the 1960s, the United States was the preeminent and indeed quintessential source country. It was thus also the most conspicuous potential beneficiary of international limits on nationalistic policies of host countries. Today, the United States remains a major source country as well as the strongest voice for international action to regulate investment policies. Yet it has also become the world's most important host to direct investment, with all the political pressures that role entails. Correspondingly, the European Community, as well as Canada and Japan, have gained a stake in placing limits on host-country investment policies, particularly those of the United States.

A key policy question for the United States in the 1990s is therefore analogous to the one raised by the national debate on trade policy a decade earlier; that is, whether it remains willing and able to champion global goals even when this requires some sacrifice of perceived national needs. More specifically, is the United States willing and able to continue its leadership role in combatting investment policies that achieve narrow sectoral objectives at the expense of global efficiency? Or will it instead join other host countries in yielding to interest-group pressure and xenophobia? ■

Determinants of US Manufacturing Investment Abroad

ROBERT R. MILLER

Recent technological and business changes are forcing multinationals to rethink their investment strategies. A recent study by the International Finance Corporation (IFC) examines whether these changes might be prompting US multinationals, in particular, to shy away from investing in developing countries.

During the past few years, US manufacturing foreign direct investment in developing countries has risen steadily, now totaling around $3 billion annually—roughly 22 percent of total capital flows from industrial countries to developing countries. This investment has been heavily concentrated in Latin America (60 percent) and East Asia (30 percent), with Brazil and Mexico accounting for over one half of all US manufacturing investment in the developing world and the leading ten US foreign direct investment countries accounting for 86 percent.

Typically, manufacturing plants located abroad have been largely of two types: (1) those that produce for local markets, frequently with government encouragement and protection, that is, "import substitution" (for example, the early establishment of motor vehicle and equipment firms in Argentina, Brazil, and Mexico); and (2) those that supply US markets from so-called export platforms (for example, the manufacture of electronic components in Malaysia and Thailand). The latter were usually labor intensive, relying upon the availability of substantially cheaper supplies of unskilled, but trainable, labor in the host country.

Increasingly, however, US firms are re-examining their investment strategies. More and more countries have been reducing protection levels, opening their markets to stiffer international competition. Import substituting factories no longer represent essentially independent production points, but are more and more viewed by corporate managers as parts of much larger regional or international production systems. Even in export-oriented investments, new technologies are raising labor productivity in industrial countries to the point that direct labor costs (those costs identified with specific products) have all but vanished in the manufacture of many products. Indeed, where products are to be sold in industrial country markets, any direct labor cost advantage that might have resulted from production in a developing country is often exceeded by the cost of transporting the finished good to market.

In light of these changes, the International Finance Corporation undertook a study of the potential effects of evolving manufacturing strategies on developing countries. The study was intended to be exploratory, possibly suggesting other research areas to be broached in the future. Four industry groupings were selected on the basis of their importance in US manufactured imports from developing countries: semiconductors and electronic components, automotive components, consumer electronics, and footwear (which was later eliminated because over 80 percent of shoes sold in the United States are imported). In-depth interviews were conducted with executives in over a dozen companies.

What the figures show

The data on foreign direct investment flows do not yet show any dramatic shift, but one indicator—US manufacturing flows to both industrial and developing countries—demonstrates a generally rising, if volatile, trend through the past decade with respect to flows to the developing world, especially since 1987 (see chart). Developing country investment in place represents about 15 percent of total capital stock, but flows have been above 20 percent in each of the past three years. In addition, changes in the proportion of manufactured imports from these countries move along much the same line. Thus, the proportions of both US foreign direct investment and manufactured imports represented by developing countries has been increasing recently, suggesting a rising dependence on production in these regions.

In real terms, however, US foreign direct investment in developing areas has been relatively flat since 1988, after having grown rapidly earlier in the decade. Nearly two-thirds of the investment has been in two countries, Mexico and Brazil. Leaving aside Mexico, real foreign direct investment elsewhere has declined since 1988. Although only speculative, such a pattern of investment might indicate that companies favor a few larger developing countries as primary areas for future corporate growth

over industrial areas. Until sufficient scale can be achieved through local market sales, part of the output from these foreign plants may be exported to the US market.

Changing strategies

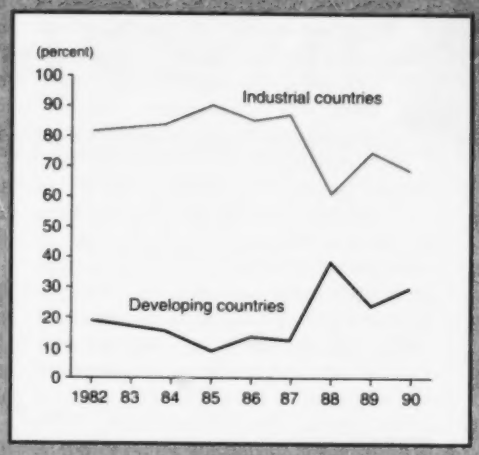
In its survey, IFC tried to ascertain whether new manufacturing technologies would sharply diminish the importance of unskilled labor as a determinant of plant location, putting greater emphasis instead on other elements that might not be in relatively abundant supply in poorer countries.

Labor costs. Direct labor is becoming a relatively minor part of total production costs. Even in standardized automotive components (coil springs, piston rings, and valves), companies say direct labor costs are only 10–15 percent of total manufacturing costs, a figure that continues to fall. For many products, the percentage is even less. In electronics, the proportion can be as low as 2 or 3 percent.

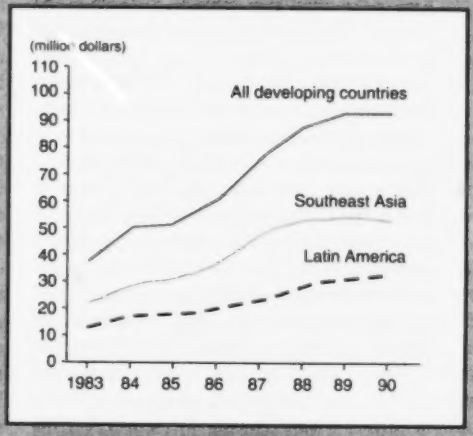
Some companies have found, however, that indirect labor costs—those not directly attributable to specific outputs—can still be an important determinant of competitive advantage. Some of these workers are unskilled (janitors or warehouse workers), but others perform tasks that are considerably more demanding (equipment maintenance workers or electricians). Companies are finding that certain skilled tasks can be done effectively in at least some developing countries, if adequate training is provided and if management is flexible. Both General Motors and Ford, for example, successfully transferred advanced engine production to Mexico.

But in the long run, much of this may be academic, as both direct and indirect production worker hours are generally declining as a proportion of total labor hours. In transportation equipment, US production worker hours in 1990 were actually fewer than in 1951, despite higher output, while nonproduction labor hours increased by a factor of three. This pattern is repeated in many other industries, as "white collar" occupations become increasingly important. Thus, the relative advantage that developing countries can offer through low-cost labor has become much less important.

US foreign direct investment in manufacturing shifts in favor of developing countries



Growth of US manufacturing imports from developing countries is moderate, but steady



Source: US Department of Commerce.

The question is to what extent white collar occupations, in addition to more skilled production jobs, can be transferred to a developing country environment and, given other changes, whether it makes economic sense to do so.

Product and process technologies. Technologies related to product design and manufacturing techniques are becoming intertwined, and it is difficult to discuss one without implicitly involving the other. "Design for manufacture" involves linking design with production engineers at the beginning of the design process so that potential manufacturing problems can be caught early. The need to keep product design and manufacturing engineering coordinated is driven by increasingly higher quality requirements and by new technology. High quality levels, in turn, demand precision in manufacturing while maintaining low production costs.

Computer-assisted manufacturing techniques and flexible equipment often provide the means to accomplish these multiple goals. Achieving them, however, also requires concurrent consideration of both product specifications and manufacturing ability. Conversely, development of new production techniques is often driven by the manufacturing requirements of more challenging product designs. Many of these techniques are highly capital intensive, and labor costs are insignificant.

Most executives in the IFC survey said that the pace of both product and process technologies already is making it more difficult to locate production facilities in developing countries. As technologies become more complicated, greater emphasis is being placed on the availability, cost, and effectiveness of support personnel —maintenance workers, programmers, manufacturing engineers, financial experts, and so on. Some of these functions can be done in a few developing countries. But when these skill requirements are combined with tighter product development cycles and the need to rapidly adapt production to changing market demands, production dynamics do not appear to be as encouraging for developing countries as they were a decade ago.

Rising quality levels. It is old news that product quality levels are improving steadily in the United States, mostly because of international competitive pressures. Invariably, high quality is synonymous with high capital intensity. Even in circuit board assembly, for example, when production remains in developing countries, much of it becomes considerably more capital intensive than before.

Quality improvement has other effects on location decisions: It has made possible just-in-time (JIT) inventory systems, in which in-

ventory is minimized and components delivered to assembly operations when they are required. Because quality deviations can be disastrous, many companies are insisting that only where production quality can be checked exhaustively and without error at the source should distant suppliers be tolerated. Such a requirement is more likely to be possible in simple production than in more complicated assemblies.

Companies are not avoiding all developing country locations because of quality demands, however. Rather, these demands have led to a separation of developing countries into two categories: those where the specific skills needed are available and those where they are not.

Changing organizational structures. The radical organizational changes being undertaken in US corporations are at least as important to manufacturing as technological changes occurring in processing. Some companies report improvements of 30–50 percent in labor productivity through various organizational changes, without any modification in capital equipment. This astonishing improvement, still in progress in many companies, has resulted from emulation and adaptation of Japanese organizational practices.

Best known among these practices are the JIT procedures noted above. Because of JIT and other considerations, the trend is toward locating supplier and customer plants close together and toward more closely integrating the two operations. The key to competitive success is maintaining sustainable advantages that, among other things, depend upon quickness of response and low inventories. As a consequence, the number of supplier factories is increasing and the average size is decreasing, as these operations become more closely tailored to particular customer requirements.

A corollary of tighter supplier-customer relationships is a marked decrease in the number of suppliers serving assemblers, which is desirable for a variety of reasons. It simplifies purchasing operations, facilitates working relationships with suppliers, and fosters better integration of supplier operations with those of customers, including design and engineering.

While some industrial countries are transferring organizational practices to developing country markets, the demands of JIT deliveries reduce the number of production facilities found in those countries. Much US manufacturing investment in developing countries, especially in countries most important in value terms (Mexico, Brazil), have been intended to serve local markets, often behind tariff protection. As trade barriers fall in many of these countries, these investments must become much more efficient if they are to operate at international cost levels. The result will be an emphasis on creating concentrated production clusters where the available infrastructure supports efficient and competitive manufacturing.

Implications

The use of labor in US manufacturing has been declining for many years and, if present trends continue, will represent less than 15 percent of the total labor force by the turn of the century. This process has been accompanied by an even more abrupt decline in the proportion of unskilled laborers who remain in manufacturing jobs, a trend caused partly by technology changes and partly by the movement of these jobs to low-wage countries. In the production of tradable goods, unskilled labor markets in the United States have been effectively joined with international markets. Where production does not lend itself as yet to technology-intensive methods (apparel assembly and footwear, for example), a large share of output already has been transferred to poor countries.

From the information gained in the survey, one can conclude that the ability of countries to attract manufacturing investment on the basis of pools of cheap, unskilled labor has diminished in recent years, a trend that surely will continue. The need for such labor in the manufacture of many products simply is much less than it was a decade ago. Given the current pace of technology development in products and processes, even most export platforms will require upgrading to continue to be competitive, which implies enhancing human skill levels as well. Developing countries that have more highly skilled labor available at relatively low wages can favorably influence plant location decisions. But the necessary reservoir of better prepared workers exists primarily in only a few middle-income countries.

The renewed focus on the relationship between markets and plant location suggests the following scenarios:

- less emphasis on IBM-style organizations (where a single plant might furnish products to other subsidiaries all over the world);
- more focus on regional markets in Europe, North America, and Southeast Asia, where there is proximity to large and relatively developed markets;
- fewer international transfers of parts and components, except possibly within regions;
- export platforms will be less common; and
- more emphasis on developing local operations ancillary to manufacturing, including technical services, especially those involving higher skill levels.

Although production labor costs are declining for most products, some types of manufacturing thus far have remained largely unaffected (apparel, shoes). For these, there will continue to be a motivation for locating production in poorer areas.

There are other reasons for locating production in developing areas, some of which will become more important with time. For example, companies increasingly want to locate facilities close to markets, some of which could be in larger developing countries. Moreover, for some production processes, scale requirements are falling (steel, for example), and large markets are commensurately less necessary to justify production of these items.

The increasing reliance on local suppliers for complete subsystems and even final products could result in significant "trickle down" effects in much the same way that industrial country firms moved their production in an earlier time. Already there is some evidence of this in the more labor-intensive segments of production. Some Thai apparel firms, for example, are transferring parts of their production operations to Cambodia and Vietnam. Taiwanese shoe companies are establishing new operations on the mainland. Thus, the hope for poorer developing countries may not be in attracting mature major corporations (which will continue to concentrate on richer markets), but rather on locating newer multinationals from other developing countries. ■

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The How and Why of Credit Auctions

J. LUIS GUASCH AND THOMAS GLAESSNER

Concerns about misallocation of resources and adverse effects on the development of domestic capital markets have led international lending institutions and their developing member countries to explore alternatives to subsidized administered credit controlled by public sector agencies as a means of distributing development funds. One of the most promising of these alternatives is development credit auctions.

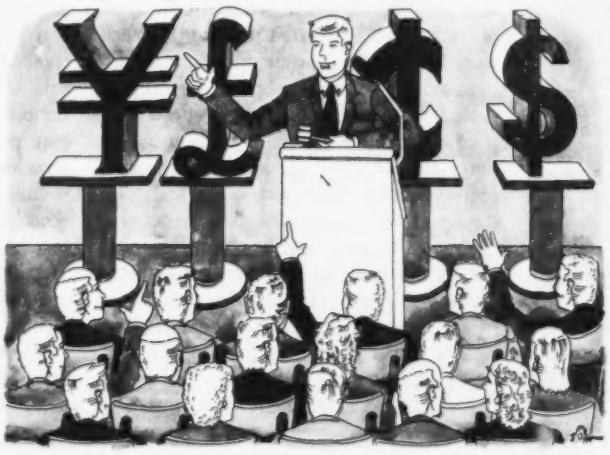
Most developing countries seeking long-term external financing either cannot obtain the needed funds in world capital markets or must pay premium interest rates commensurate with the assessed financial risk. Consequently, they often rely on international lending organizations such as the World Bank to provide funds for long-term investments. While some of this financing is directly incorporated into the government budget or spent on specific projects, some is channeled to the commercial sector as credit lines.

Channeling financing to the commercial sector raises the issue of how to allocate and price these funds. In many developing countries, there are no market rates to use as a benchmark for pricing long-term credit. In addition, the interest rate the government pays to borrow its funds is significantly lower than any rate that the final borrowers will pay, thus generating so-called rents. Improper pricing of credit also leads to misallocations of capital and is a disincentive for the development of domestic capital markets. And because the amounts of money involved are large, the rents can be substantial, which is an incentive for corruption and wasteful rent-seeking activities.

Traditionally, governments have established administrative arrangements for pricing and allocating funds at various stages of the lending chain. This requires that a government institution either lend directly to final borrowers or operate as a second-tier institution, allocating and pricing funds to financial institutions through rules and bilateral negotiations. Frequently, these mechanisms have lacked transparency, and prices have not reflected the opportunity cost of capital. The results have been arbitrary allocations, price distortions, rent-seeking activities, and worsening income distribution. Financial intermediaries and other influential groups capture the rents that should accrue to the government.

Is there an alternative?

The distortions and welfare losses inherent in existing mechanisms for intermediating long-term development credit has led to an increased interest by both international lending organizations and their developing member countries in alternatives. One of these is to auction development credit to institutions that meet certain eligibility requirements.



Auctioning of development credit has already started in Chile and Bolivia, and it is being considered in Argentina, Colombia, Ecuador, Honduras, Jamaica, Peru, and Trinidad and Tobago. The experience in Chile and Bolivia has been highly positive (see boxes), particularly in terms of improved efficiency and competitiveness, reduced transaction costs, and increased government share of the rents.

Auctions provide distinct advantages over conventional methods of lending as they neither segment the domestic financial system nor retard development of securities markets. Other advantages include transparency in lending, competitiveness, fairness, price discovery (auctions can elicit the assessed value of long-term credit), reduced transaction costs, and the virtual elimination of rent-seeking activities.

Credit auctions do have some problems, however. Adverse selection (the risk that a marginal institution will obtain more credit than desirable) and moral hazard (the inability of the lender to control how the funds will be used) are two examples. In addition, there is the potentially more damaging risk of collusion. These problems can, to some extent, be neutralized, however, so that development credit can be more efficiently allocated than under current methods.

When considering credit auctioning as an alternative to traditional methods of allocating credit, a number of economic and operational issues must be considered:

• In what countries is it appropriate to auction development credit? What are the tradeoffs be-

Chile

Chile began to allocate development credit via discriminatory pricing sealed bid auctions in June 1990, using funds from the World Bank and from the Inter-American Development Bank. Except for the first two auctions, separate auctions have been held for banks and leasing companies. Multiple products—involving several maturities, differing currencies, and fixed and variable interest rates—have been simultaneously auctioned. Participants submit sealed bids stating desired product, interest rate, and quantity. There are no sectoral restrictions on the use of funds, but the money may not be used for working capital, housing, urban development, any form of personal transportation, or purchase of imported capital goods or goods previously financed under the project and previously owned by the lessee. The auctions are administered by CORFO (Chile's National Development Bank), a state-owned autonomous institution serving as a second-tier financial institution. CORFO analyzes the bids, compares them across products, selects cutoff rates for each product, and allocates existing funds, from highest to lowest interest rate offered, until all funds are exhausted or there are no more bids above the cutoff levels. These levels are linked to a weighted average of short-term rates.

The results of the 14 auctions held during 18 months are most encouraging. The credit auctions have removed practically all personal discretion, except on the selection of cutoff levels across products, the allocation of credit has been transparent, and transaction costs have been reduced. The auctions have elicited prices fairly close to the opportunity cost of capital for both financial intermediaries and final users. The participation of leasing companies as well as banks has significantly enhanced competitiveness. Leasing companies have been the most active, in terms of participants, demand, and funds awarded. There has consistently been excess demand, particularly from leasing companies, and the allocation of funds has roughly coincided with market shares distribution. There appears to be no evidence of collusive agreements or adverse selection, and the auctions have virtually eliminated rent-seeking activities by all parties. The level and distribution of bids indicates strong competitive behavior. In addition, the auctions have established competitive price benchmarks, previously nonexistent, for some forms of long-term credit.

tween credit auctions and conventional bilateral negotiations?

• If development credit is to be auctioned, how should the auction be designed and what should be its objective—maximizing expected revenue, generating a surplus, or eliciting high interest rates? Who should participate and how should they be screened or certified? What products (fixed versus variable interest rate, what currencies, what maturities) should be auctioned? Which type of auction and pricing rules should be adopted? What should be done to overcome problems of collusion or adverse selection? What information should be made public before and after the auction?

When is an auction appropriate?

Development credit auctions should be considered when there is significant evidence that current conventional lending practices are not providing a fair and efficient allocation of credit and that rents are not being fully captured by the designated beneficiaries. The evidence should indicate (1) significant arbitrariness, favoritism, or corruption in existing credit allocation procedures; (2) significant discrepancies between onlending rates and quasi-equivalent market rates for the first tier institutions and final borrowers (when the intention was not to subsidize credit at any stage of the lending chain); and (3) unsatisfactory repayment rates.

Supervisory agencies must have the ability and administrative capacity to monitor and assess the credit risk of potential participants. Otherwise, the problems of adverse selection and moral hazard may be exacerbated, thus hindering the efficiency of auctions.

There should be evidence that competition exists or can be induced in the banking and financial sector. For this purpose, there should be at least three to five qualified participants. It is particularly important that there be a competitively determined measure of the marginal cost of funds to auction participants. The government can use this rate as a benchmark to create its floor interest rate (the interest rate below which it will not award bids), to limit collusion, and to assess the competitiveness of the auctions.

Where state-owned banks are major participants, credit auctions are unlikely to be suitable until the banks are privatized. Auctions of credit by the government to government-owned or state banks could cause greater distress bidding and may not reflect opportunity costs. The lack of market and financial discipline in those institutions is likely to undermine the benefits auctions can provide. Moreover, being the *de facto* buyer and seller, the government could manipulate the outcome of the auction, rendering the process less credible. Where financial institution ownership is mixed (state and private), the state-owned banks should be allowed to submit noncompetitive tenders, acquiring funds at the average of winning auction bids.

In countries where there is no reasonable "proxy" reference interest rate for long-term credit, auctions are appropriate because of their price discovery feature. In many Latin American and Caribbean countries, for example, loan terms usually do not extend beyond one year. Consequently, there is no obvious reference rate for long-term credit that can be used as a benchmark in negotiated agreements. Private financial institutions can better assess the value of long-term credit than can government agencies. Auctions can elicit these valuations.

How to conduct an auction

The objective of development credit auctions should be to maximize expected revenue after allowing for default risk. Credit should be allocated at interest rates that reflect the opportunity cost of capital to participants, and should not be extended at rates lower than those of alternative sources of funds to participants, or lower than the government's marginal cost of borrowing. An efficient auction is one in which the bidders with the highest expected valuations are awarded the funds.

A reliable and preferably independent securities rating agency should be used to assess the creditworthiness of auction participants. Periodic supervision and updates on the financial status of the declared eligible participants should be undertaken. In some cases (where there are large disparities in the size or risk ratings of auction participants, for example), eligibility criteria may have to be coupled with the imposition of institution specific quantity constraints on amounts borrowed. To discourage unqualified financial institutions from applying for participation, and to cover administrative costs, a nonrefundable application fee for the right to be considered eligible should be imposed.

Country specific conditions should dictate the choice between auctioning credit and establishing credit lines, keeping in mind certain tradeoffs. To enhance efficiency, credit should not be restricted to specific sectors. Initially, a single product, long-term real rate domestic currency (unless the economy is dollar-based) should be auctioned, instead of multiple products. Offering multiple products presents the complex problem of creating criteria to compare rates across products and involves assessment of premiums on terms, interest rate volatility, and exchange rate risks. The government does not have a comparative advantage in that endeavor and should limit its role of market maker. In selecting the product, the government should be responsive to the preferences of the participants.

There are a number of types of credit auctions but if there are multiple successful bidders, the revenue and efficiency differences of various auction designs appear to be relatively

Bolivia

Development credit auctions were introduced in Bolivia in mid-1990 as part of the government's efforts to liberalize interest rates to final borrowers. Bolivia's experience with credit auctions contrasts dramatically to that of Chile (see box) because of its underdeveloped securities and financial markets, which are characterized by high concentration.

In Bolivia, multiple products are auctioned to eligible banks, with portions of different credit lines offering different currencies (dollars, marks, yen), maturities (one year in the case of trade finance lines), grace periods, and eligible transactions and sectors (agriculture, export, and others). Interest rates on credits awarded are reset quarterly, based on the difference between the rate present in the previous quarter and the average auction rates elicited nearest to the time rates must be adjusted. The maturity of the credit auctioned is not predetermined, but is a component of the bid. A technical committee determines the amount of credit to be auctioned and sets the floor interest rate. This rate is announced prior to the start of the auction and rates below it are disqualified. Participants submit sealed bids that indicate the interest rate, quantity demanded and associated maturity, and the applicable line of credit. These bids are ranked from highest to lowest interest rate and credit is allocated according to the highest interest rate offered until funds to be auctioned are exhausted.

Relative to previous arrangements, Bolivia's credit auctions represent an improvement. They have reduced transactions costs and ensured that the government can obtain a greater share of the rents associated with intermediating development credit. The lack of discretion given to individuals in the central bank to set rates and the rules adopted for setting the floor rate have been critical. Data on the structure of bids in the first eight auctions held revealed that for the six most important credit lines auctioned, government offers of funds were far in excess of the amounts placed ($132 million versus $27.8 million). Also, little dispersion occurred in the interest rate bid, with virtually all bids at the floor rate of 13 percent a year. Although this would seem to suggest that the pricing of development credit would have to fail to clear the market, alternative costs of short-term funds to eligible participants or to the government often exceeded the floor rate by at least 1–2 percentage points. This type of empirical anomaly may reflect collusive behavior, in that Bolivian banks have refrained from bidding at above the floor rates to force the government to lower the floor rate.

These tendencies to collude were heightened by certain aspects of auction design. For example, divulging the floor price prior to the auction, not permitting multiple bids, and disclosing information about the nature of the bids made by all participants resulted in strong incentives for participants to not submit bids different from the floor rate. Many of these problems were recognized and have now been remedied.

small. Some types of auctions tend to facilitate collusion, however, which can have a significant impact on their outcomes. Priority should therefore be given to those auction designs least vulnerable to collusive arrangements.

In discriminatory pricing sealed bid auctions, bidders submit sealed bids and the highest bids are allocated the requested funds until either the funds are exhausted or the bid does not exceed the floor price. Each successful bidder pays his own submitted interest rate. This type of auction is almost revenue-equivalent to other types of auctions, and for auctioning multiple objects they are less vulnerable to collusive practices. Initially, therefore, countries may wish to use discriminatory pricing sealed bid auctions. Submission of multiple bids should also be allowed because they increase efficiency by providing for portfolio diversification, by allowing submission of marginal bids rather than average bids, and by making it more difficult for collusive agreements. Auctions should be held at frequent, known intervals to reduce the amount of funds to be awarded at a single auction and to provide a steady stream of funds to cover the normal yearly flow of investment projects.

To reduce the consequences of adverse selection and moral hazard, consideration should be given to setting institution specific cumulative caps on the maximum amount awarded, and imposing covenants on the use of funds. Those caps can be reassessed in light of the performance of the institution and their ability to prevent marginal institutions from obtaining large amounts of funds.

Collusion and competitiveness

To guard against collusion and to enhance competitiveness, a number of actions should be considered in designing a credit auction:

- A floor price, based on the closest existing rate of alternative costs of funds, should be set but not revealed to bidders. Although there may not be reference market rates for the pricing of long-terms funds, in most cases there are rates such as averages of 30- to 365-day bank deposits, prime rates, government cost of Treasury bills, and some bond rates. These rates should be used to create the floor price and should be revised periodically according to interest rates and bidding patterns of participants.
- The amount of funds to be awarded at each auction should not be revealed.
- To avoid cheating on presumed collusive agreements, information of the specifics of winning bids should not be revealed.
- In the presence or presumption of collusive agreements, increases in the floor price should be considered.
- The participation of qualified heterogeneous financial institutions should be encouraged. Single joint auctions should be held and, under certain circumstances, the handicapping of bids (adding a number, say 1 percent, to the bids of one group, for the purpose of ranking bids) across groups should be considered.

Conclusion

In countries with well-developed government securities markets with maturities beyond one year (Mexico, for example), the need to auction development credit may not be pressing since those rates can be used as benchmarks in pricing. In other countries, auctions can complement and facilitate reforms to develop the financial and securities markets. They are a valid alternative, albeit a transitional one, particularly when current lending practices are unsatisfactory. The experience in several countries in recent years suggests that auctions, if properly designed, can be an effective tool for development.

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Energizing Trade of the States of the Former USSR

CONSTANTINE MICHALOPOULOS AND DAVID TARR

For the 15 newly independent states of the former USSR, transitional trade and payments arrangements are urgently needed to stop the precipitous decline in trade. Next steps should include a sharp cut in export controls, a reduction of state trading and a parallel expansion of inter-enterprise trading, and the development of multilateral clearing and payment mechanisms.

Since August 1991, the 15 states of the former USSR have been establishing themselves as independent nations, each embarking upon systemic reform on a different scale and at a different pace. But with a new incentive structure that discourages trade among the states of the former USSR (so-called interstate trade) and without the necessary institutions to facilitate trade, trade relations among the states have been thrown in disarray, at times verging on a collapse.

Interstate trade had traditionally accounted for the bulk of total trade of the states of the former USSR. Russia was the least dependent, with trade with the other states accounting for 61 percent of its total trade in 1990, compared with over 80 percent for the others (see table). In the aftermath of the breakdown of the USSR, precise data on trade among the New Independent States are not available. But preliminary estimates suggest that interstate trade declined by over 30 percent in 1991. Ominously, further substantial drops in this trade are widely reported for 1992 and the outlook for 1993 is grim.

Of course, some decline in trade flows was expected. After all, for the past 40 years, as in Eastern Europe, trade among these countries was not based on economic principles of comparative cost and locational advantage. Indeed, studies indicate that in the years ahead, these economies can be expected to (1) trade less with each other and more with other countries, notably those in Western Europe, and (2) import more machinery products and export more raw materials and metal products. Unlike Eastern Europe, the former Soviet states must now struggle not only with serious payment problems but also a lack of monetary coordination among those states still using the ruble, and uncertainty surrounding the creation of new currencies.

The main worry now is that the continued contraction in interstate trade will contribute to further declines in output and incomes. Thus, policymakers need to adopt transitional mechanisms that would help states restore efficient trade flows and avoid further serious disruptions of trade flows in the short term, while supporting their longer-term adjustment and integration into the world economy.

Major causes for concern

Throughout 1992, an almost chaotic situation characterized trade and payments in the former Soviet states, reflecting a variety of problems. At the root was the collapse of the monetary and payments system.

Payments regimes. During the first six months of 1992, Russia alone could print rubles, but the central banks of all the states in the ruble zone could expand the money supply by creating credit in rubles. In the absence of monetary coordination, this quickly gave rise to a "free rider" problem, because monetary restraint by some central banks could be exploited by others able to expand their money supply independently. Not only did this situation contribute to inflation but it also impeded efforts to stabilize the ruble and

For a fuller discussion, see "Trade and Payments Arrangements for States of the Former USSR," by the authors, Studies of Economies in Transformation No. 2. *The World Bank, 1992, available from World Bank Publications Services.*

posed difficulties for trade and payments. It did so by creating a disparity in incentives to export between enterprises and for the economy as a whole. Assuming enterprises felt they had as much chance of getting paid (in rubles) when exporting to another state as when selling in the domestic market—not always a valid assumption—they would be indifferent as between the two markets; but for the country as a whole, it would be less advantageous to exchange goods for rubles—after all, its central bank could create all the rubles it wanted.

As the year wore on, Russia, notwithstanding its own considerable monetary expansion, accumulated a significant trade surplus with other republics. This reflected, in part, traditional structural relationships and, in part, the relatively large upward adjustment in the price of oil—Russia's main export. To stem the outflow of goods and control the provision of credit to other states, Russia established a network of correspondent accounts for the central banks of the states, which monitored all bilateral transactions; after July 1992, credit limits were imposed on these accounts. When a country exceeded its limit, the Russian central bank would refuse to clear payments orders (like checks) of enterprises in the debtor country, meaning that Russian exporters would not be paid for the goods they shipped to that republic.

Exacerbating matters was the dramatic decline in the efficiency of the interstate banking system following the dissolution of the Gosbank, once the central bank for all the states. Exporters and importers found that it took two to three months to clear payments orders—a risky business in an environment of high inflation.

At the same time, several countries—such as Ukraine and the Baltic states—introduced their own currencies or quasi-currencies. Others plan to do so in the near future. New currencies do not pose a problem for trade, so long as they are convertible for trade transactions. But if they are not, these states will have to develop clearing and payments arrangements that support direct enterprise-to-enterprise trade. Otherwise, trade among enterprises will continue to be quite inefficient, as it would be based on barter and state-to-state agreements.

Trade regimes. Perhaps the most significant trade barrier—both for interstate and convertible currency area trade—is the widespread use of export licenses and quotas. The motivation for these controls derives from two main considerations:

- Given a lack of monetary coordination within the ruble zone, each country has a strong incentive to import goods and pay for them in rubles, which their central banks can create independently. One way countries can guard against this is to impose quantitative limits on exports.
- Given that the extent of price liberalization has varied greatly from state to state, there are significant price differences in a number of products. Moreover, many prices, notably for energy, are still well below the world level. Without export restraints, such products would be exported to world markets, or to other republics who have higher prices.

On the import side, formal restraints are quite low, as licensing has largely been removed and tariffs are either low or not applied. Competition from abroad is nonetheless weak, because those who must pay market rates for foreign exchange purchase foreign exchange with a substantially undervalued ruble. There are extensive foreign exchange subsidies, but these are available only on non-import-competing products.

Given prevailing market rates of the ruble to the US dollar in most states in 1992, workers have been earning only about 10 US dollars a month, demonstrating the very high value of convertible currency and the high cost of imports at market exchange rates. The undervaluation of the ruble is caused by a number of factors, most notably (1) policies that discourage the repatriation of foreign exchange, such as real interest rates that have remained negative, frequently by 50 percent or more; and (2) policies that discourage exports for convertible currency. The latter include licenses and taxes on exports, along with requirements to surrender foreign exchange earnings at rates much lower than those prevailing in the free market.

State trading through bilateral arrangements. In an effort to deal with interstate trade problems, countries have resorted to many of the features that characterized trade under central planning. By March 1992, an extensive network of intergovernmental bilateral trade agreements had been signed, dividing trade into three categories: "obligatory," "indicative," and enterprise-to-enterprise.

Obligatory list trade entails the intergovernmental barter of 100–150 of the most important energy products and raw materials. Commitments obligate states to fulfill their contracts, and maximum allowable prices are usually specified. Indicative list trade typically includes up to 1,000–1,500 products, such as machinery, agricul-

Intraregional trade looms large in the former Soviet states

	Foreign trade		Share of intraregional trade
	Total [1]	Intraregional [2]	
	(percent of GNP)		
States of the former USSR (1990)			
Russian federation	18.3	11.1	60.9
Ukraine	29.0	23.8	82.1
Belarus	47.3	41.0	86.8
Uzbekistan	28.5	25.5	89.4
Kazakhstan	23.5	20.8	88.7
Georgia	28.9	24.8	85.9
Azerbaijan	33.9	29.8	87.7
Lithuania	45.5	40.9	89.7
Moldova	33.0	28.9	87.7
Latvia	41.4	36.7	88.6
Kyrgyzstan	32.3	27.7	85.7
Tajikistanian Republic	35.9	31.0	86.5
Armenia	28.4	25.6	90.1
Turkmenistan	36.6	33.0	92.5
Estonia	32.9	30.2	91.8
Eastern Europe (CMEA) (1989)			
Bulgaria	30.1	16.1	53.4
Czechoslovakia	23.0	10.9	47.2
Hungary	34.1	13.7	40.3
Poland	19.6	8.4	43.1
Romania	17.6	3.7	21.0
European Community (EC) (1990)			
Belgium	74.2	44.5	60.0
Denmark	32.7	13.7	41.7
Germany	29.8	14.4	48.2
Greece	26.8	13.3	49.4
Spain	19.8	9.0	45.3
France	23.3	13.0	55.6
Ireland	59.9	38.9	64.9
Italy	20.4	9.7	47.5
Netherlands	54.4	34.2	62.9
Portugal	42.1	24.6	58.4
United Kingdom	26.0	10.7	41.2

Sources: States of the former USSR: Goskomstat for trade data in foreign trade prices, and unpublished World Bank estimates for GNP; Eastern Europe: UNECE (1990) for trade data, and World Bank Atlas for GNP; Pisani-Ferry and Sapir for the EC. 1989 data are used for the states of the former USSR and the EC; 1988 data for Eastern Europe.

[1] Average of exports and imports as a percent of GNP.

[2] Trade within the states of the former USSR, the CMEA, and the EC, respectively.

tural, and consumer goods. Such trade differs from the obligatory kind in that, although in both cases states agree to provide licenses for enterprise contracts up to the quota amounts specified in each protocol, no trade will take place unless individual enterprises agree on the terms of the sales, including price and credit conditions. The third category includes all remaining products that can be freely traded among enterprises. In practice, however, little is traded free of restraints, as the bulk of trade in value terms is included in the first two categories.

These bilateral agreements fall far short of "solving" the myriad trade and payment problems. To begin with, it is unclear how frequently and exactly how trade imbalances among the states should be settled—convertible currency, rubles, and additional goods shipment have been proposed as means of payment, with payment periods ranging from a month or shorter to a year. There are also significant problems with fulfilling obligatory trade agreements, largely as a result of the continuation of price controls, which reduce the incentive to export. At the same time, the system of state orders has either broken down or become less effective. As a result, enterprises, which either do not find it profitable or lack the needed inputs, often do not supply the agreed-upon quantities. More fundamentally, as long as trade is conducted on the basis of bilateral pacts, it is governments rather than markets that are determining the allocation of resources.

Barter. Another way of coping with the confused trade and payments situation is by resorting to barter—which appears to account for a significant, although impossible to quantify, share of interstate trade for a number of reasons. First, because of provisions in the intergovernmental protocols, price controls are prevalent in interstate trade. Second, there are now high risks and costs associated with using the banking system. Third, arrears between enterprises has been a large problem in most states, and the risk of nonpayment is even greater on interstate sales.

Terms of trade. Superimposed on these problems is a deterioration in the terms of trade for many states, as domestic prices are brought closer to world prices. Preliminary estimates suggest that those hardest hit will be Belarus, Moldova, and the Baltic states, who, depending on the actual pattern and volume of trade, might experience losses of about 10–20 percent of GDP. Furthermore, to the extent that international prices are passed on to final users, activities dependent on underpriced inputs (both in domestic and interstate trade) might need considerable restructuring. By contrast, raw material and energy exporters, such as Russia and Turkmenistan, stand to gain. And others, such as Azerbaijan, Kyrgyzstan, and Uzbekistan seem likely to suffer little or no adverse consequences.

In the end, a terms-of-trade adjustment is unavoidable—indeed it is essential for improving resource allocation and integrating these economies into the world economy. On the other hand, there is a question as to how quickly this adjustment should take place. Already, some states are trying to offset their losses by exploiting whatever monopoly power existing linkages and the transportation network give them.

Proposed transition policies

Experience has shown that, as the states of the former USSR look ahead, growth would be facilitated by the establishment of currencies that are convertible on current account (whether it be a convertible ruble zone or new currencies) and the adoption of a trade regime with low and uniform tariffs—free as much as possible of nontariff barriers—to encourage unregulated trade between enterprises. But the current situation is so far removed from this environment that the key questions now center on how best to shape transitional, often second best, arrangements that nonetheless would bring them closer to their desired longer-term goals.

Trade regime toward third countries. Experience throughout the world suggests that, in general, policies that discourage exports should be avoided. In particular, quantitative restrictions and licensing requirements would need to be removed, and exporters should not be forced to surrender foreign exchange earnings at below market exchange rates. Moreover, export taxes are not needed—except on a temporary basis for those few commodities whose domestic prices are controlled and hence below international prices at prevailing exchange rates. Even for these, export taxes should decline to zero as the domestic price moves toward the world price. If states pursue these policies, they should be able to sharply increase their prized convertible currency earnings, thanks to a higher level of exports and an exchange rate that is very favorable to exporting.

On the import side, as long as enterprises continue to trade with each other for rubles in an environment of an undervalued ruble and central allocation of foreign exchange, import competing industries are highly protected and there is no need for protection from third country imports. However, once the ruble is not undervalued or new currencies are introduced requiring convertible currency settlement among states, the incentive structure will change and domestic industries will face import competition from third countries and reduced demand for exports in the states of the former USSR. At this point, states may wish to provide some interim modest protection to domestic industries in order to ease the process of adjustment and cushion the potential costs of increased unemployment.

If there is to be protection, World Bank experience with trade suggests that it can be best provided through tariffs (not to exceed 20–30 percent) that (1) preferably do not vary by sector, or at least have a narrow high-low range, and (2) would decline over time. Such an approach will obviously result in slower adjustment to the long-run optimum and should not be viewed as an alternative to appropriate exchange rate adjustment. In an environment of uncertainty regarding price and exchange rate movements, however, a modest protective margin, provided through tariffs to industries with positive value-added, may be a useful transition device. Tariffs can also play a limited useful role in generating fiscal revenue during a time when tax revenue collection is not yet fully effective, although given the small share of imports from the rest of the world, the revenue from this taxation will not be large.

But if the tariffs are not moderate, they may actually serve to protect negative value-added industries. This would increase the transition costs, because in negative value-added industries, the economy would save convertible currency by importing the final product, exporting the intermediate inputs, and paying workers even if they did not work. And if the tariffs do not decline over time, they would hamper the full integration of the economies into the world trading environment.

State trading. For decades, this type of trading has seriously impeded the efficient allocation of resources and should be discontinued as soon as domestic prices are freed to adjust to world prices. Bilateral agreements may need to be maintained in interstate trade for only those products subject to price controls. However, such agreements should limit the obligatory list to those few products (e.g., oil and natural gas) that are adjusting to world prices on a gradual basis. Moreover, the agreements should increasingly use state procurement agencies, rather than state orders, to carry out trade in these products. For all other products, states should either stop the use of export licenses or make the licenses automatic, as is the case with the indicative list, and the licenses should not be used to balance accounts on a bilateral basis.

Governments would also want to encourage the entry of new firms in trade operations and eliminate the monopoly position of state trading organizations. This would require steps (e.g., in the availability of trade credit) to en-

sure that private traders are given equal opportunity to participate in trading activities.

Payments problems. To overcome payments problems that inhibit trade, countries must either adopt a fully coordinated monetary and exchange rate policy within the ruble area, or leave the area and adopt independent currencies.

Arrangements within the ruble zone. Any state wishing to remain in the ruble zone must accept the need to coordinate monetary policy and exercise restraint. For these states, it is vital to agree on the rules regarding seignorage, currency emission, monetary policy, and the levels of outstanding balances that each may be able to maintain. Otherwise, overexpansionary policies in one state could lead to significant negative balances that are automatically financed and result in net transfers of goods and services from the others without the receipt of convertible currency.

Measures will also be needed to reduce delays in processing payments orders and improve the efficiency of settlement procedures for ruble zone trade. In addition, commercial banks in each country should be allowed to establish correspondent bank accounts in the commercial banks of the others.

For countries with new currencies. Since these new currencies may be inconvertible for a time, there is a danger that barter will continue to dominate and enterprise-to-enterprise transactions will not materialize. Thus, a system of multilateral clearing with short settlement periods (a clearing union) should be introduced. Such a system would economize on the use of hard currency reserves by permitting transactions at the enterprise level to be conducted in national currencies. Only the multilateral balance within the union would be settled in convertible currency among participating central banks.

In early 1993, an alternative approach—using the ruble for settlement—was being considered by nine countries (excluding the Baltic states, Azerbaijan, Georgia, and the Tajikistanian Republic), in the context of negotiations for setting up an Interstate Bank. This bank, which at least in the beginning is not intended to play a monetary role, will have as its main objective the establishment of an institutional mechanism for multilateral clearing and settlement of interstate payments, based on a short settlement period and strict credit limits. Since different exchange rates are emerging for different "national" rubles and countries such as Ukraine are considering participation, the Interstate Bank may emerge essentially as a multilateral clearing house for countries with different currencies, rather than a ruble zone institution. Although it may fall short of including all new independent states and many of its features are clearly transitional, the Interstate Bank may serve a useful role in addressing the urgent need for establishing a regional multilateral clearing mechanism.

However, more elaborate payments arrangements that involve long settlement periods and the provision of substantial external credit (patterned after the postwar European Payments Union) are not recommended. Such arrangements raise questions as to whether the credits provided finance a structural deficit or the outcome of ineffective overall macroeconomic policies. They may also tend to discourage a movement toward convertibility and future integration into the world economy.

Interstate trade policy. At the very minimum, interstate trade relations should avoid beggar-my-neighbor policies that result in diminution of total trade in goods and services among the 15 states. The movement to world prices will undoubtedly lead to the deterioration of the terms of trade of a number of states, especially oil importers. But this can be mitigated in part by Russia providing energy supplies to other states at domestic oil and gas prices that could be expected to be adjusted to world oil prices in the near term. In parallel, energy-importing states should eschew the temptation of trying to compensate by exploiting monopolistic positions in other areas, such as transportation.

More broadly, the recommended transition tariffs should not be applied to the states of the former USSR—that is, it may be worthwhile to try to set up a customs union or free trade arrangement on a temporary basis. By providing moderate tariff preferences, such an arrangement could provide a modest incentive for maintaining interstate trade in the near future, thereby reducing unemployment costs during the transition.

A few guidelines would include: (1) allowing all states to join, irrespective of whether they desire to remain in the ruble zone—in fact, given the excessive incentive to import from within the ruble zone, the preferential trade pact would only be important for trade among those states with different currencies; and (2) reducing the tariff against third countries and eliminating tariff preferences over time to permit the various states to adjust to their long-run comparative advantage in international trade, which involves less trade dependence on each other.

If a broad-based agreement cannot be arranged, however, more narrow ones, such as a customs union among the Baltic states, may be worth exploring, and different groupings may want to establish different arrangements. The nature of the arrangements could vary, but the more comprehensive the arrangement, the more likely that it will help reduce transition costs in the medium term. Moreover, individual states, especially small ones, may choose not to join any preferential trade area because they regard the trade diversion costs as excessive (i.e., for the range of products they import, they would have to pay high prices to tariff-favored, intra-union, high-cost suppliers). However, they would need to consider the implications of not having preferential access to the area.

Next steps

In sum, as the states of the former USSR design transitional trade and payments arrangements, they will have to contend with a daunting list of intricately linked problems. Perhaps the top priorities should be:

- the reduction of state trading and the simultaneous expansion of enterprise-to-enterprise transactions;
- the elimination of disincentives to exports, such as licensing and other quantitative controls;
- the establishment of a satisfactory system of payments based either on a fully coordinated monetary policy within the ruble zone, or the adoption of new currencies; and
- the establishment of suitable multilateral clearing and payments mechanisms, both within the ruble zone and among the states with new currencies—otherwise, barter will continue to dominate.

It would be especially helpful if Russia were to take the lead in these matters because of the central role it plays in trading relations with all the states in the region. ■

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Can Market Forces Discipline Government Borrowing?

TIMOTHY D. LANE

Market discipline means that financial markets can send signals that prevent a borrower from abusing the system—borrowing without means or intention of repaying. In practice, however, market discipline can be too weak, allowing borrowers to run up debts that will be increasingly difficult to service. One example is the large deficits incurred by some governments in the 1980s. Under what circumstances, therefore, can market forces prevent unsustainable borrowing?

Are there any forces that normally ensure that government deficits remain manageable? What would prevent a government from pursuing an unsustainable path—borrowing without the means or even the intention of repaying? There is a clear need for *financial discipline* to check such abuse of the financial system, while allowing governments to benefit from their continuing access to credit. Today, with high and mounting public debts in many countries—including not only developing countries but even some of the largest industrial countries—it is especially important to examine how financial discipline works, and how it might be strengthened.

Obviously, individuals and firms would like to run up unlimited debts and never repay them, if they could do so without penalty. There are mechanisms, both in the legal system and in the financial system itself, designed to ensure that most borrowers do ultimately pay their debts. Some of this discipline is market based, resulting from the behavior of the lenders themselves. As a borrower's debts mount to such high levels that they might not be serviced, lenders insist on a higher interest rate spread to compensate for the higher risk of default. Eventually, a point is reached at which no interest rate could compensate for the default risk, and at this point the borrower is excluded from any further credit.

While this market mechanism is certainly not flawless, it appears to work fairly well much of the time, in the context of private borrowing and lending in developed countries; if it did not, this borrowing and lending simply could not take place. Some notorious counterexamples, such as the savings and loan crisis in the United States, illustrate the enormous potential costs with which society is faced if financial discipline is undermined.

Why do governments accumulate large debts? Borrowing may help a government to smooth tax rates over time, enabling it to ride out transitory variations in spending needs or in the revenue base. For example, governments often meet shortfalls of revenues during recessions by running deficits. Such temporary borrowing gives little cause for concern. What is of concern, though, is a case in which a government incurs steadily mounting debts, constituting an increasing share of national income. Governments might be tempted to follow such a path because the tax burden created for future generations by deficit financing may count for little against the benefits enjoyed by the government's current constituents. Excessive borrowing may also ultimately be reflected in inflation or even default, which may penalize different economic groups than those that gain from government spending; large deficits may, therefore, reflect the relative political weight of these groups.

Under what circumstances can market discipline restrain government borrowing? This issue has arisen recently in the context of the

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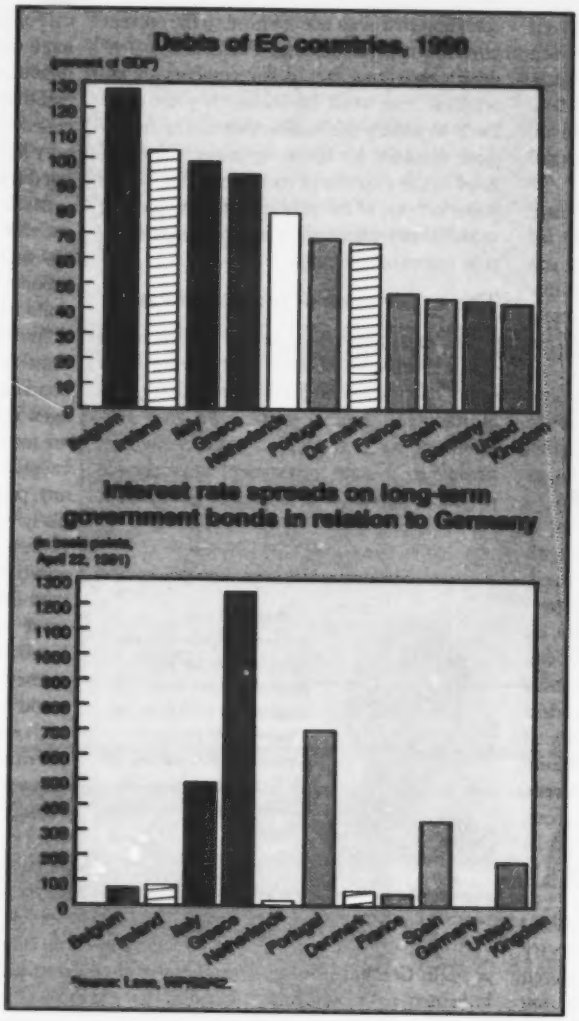
Maastricht agreement for European economic and monetary union (EMU). This agreement provides for direct coordination of member countries' fiscal policies, as well as binding fiscal limits. The concern is that, particularly in a currency union, market forces might not be adequate to keep some member countries from running persistent, unsustainable deficits.

The markets' response to government borrowing depends on the exchange rate regime. A national government with its own currency may experience market pressure on the exchange rate, and in this case, the interest rate spread largely reflects anticipated depreciation rather than pure default risk. If the anticipated depreciation does indeed take place, and is accompanied by inflation, this relaxes the financial discipline on the government by reducing the real burden of repayment. In a country that fixes its exchange rate, or belongs to an exchange rate arrangement such as the European Monetary System, higher interest rates may be associated with the anticipation of an impending devaluation. This may reflect the market's perceptions that the current exchange rate is not sustainable given the current path of borrowing. Skepticism about the sustainability of policy may give rise to a financial crisis, which may force a devaluation large enough to alleviate the pressure of the debt—essentially through resort to the inflation tax. Interest rate spreads in the European Community (EC) are influenced by debt levels, but the loose relationship shown in the charts suggests that some other considerations must also influence markets' perceptions.

In a common currency area, market discipline works the same way as for private borrowers. Excessive borrowing results first in a higher interest rate spread, and ultimately in exclusion from the market. In the EC, monetary union would eliminate the safety valve that realignments provide in the current system, implying a stricter market financial discipline. Whether this discipline would be sufficient to rein in massive budgetary imbalances, however, remains a subject of debate. It is important to consider what conditions would be needed for market discipline to be effective.



Conditions for market discipline

In order for market-based financial discipline to be effective in restraining borrowing—whether private or public—four key conditions must be met.

• Financial markets must be reasonably open, so that the borrower does not face a captive market. For market discipline to work, lenders must have the option of taking their money elsewhere if a particular borrower's creditworthiness comes into question. Market discipline of government borrowing may be thwarted by regulations requiring that financial institutions hold a certain proportion of their assets in the form of government debt; such regulations may be used to keep down a government's borrowing costs and ensure a continuous flow of lending, regardless of its creditworthiness. Similarly, capital controls may enable a government to increase its debt without driving up interest rates by limiting domestic residents' ability to seek alternative assets abroad.

• Information pertaining to the borrower's creditworthiness—such as total outstanding stock of debt—must be available to prospective lenders to enable them to discriminate among more and less creditworthy borrowers. In the absence of such information, borrowers may be able to incur debts that they cannot be expected to service; there is also the danger of contagion effects, where otherwise creditworthy borrowers are excluded from the market because they share some characteristics with other debtors that have defaulted.

In the case of governments, the difficulty of finding accurate information may be exacerbated by the widespread practice of incurring off-balance-sheet liabilities. Off-balance-sheet activity includes the establishment of special agencies or foundations whose borrowing is not included in the state budget but is nonetheless an implicit or explicit obligation of the government, or the use of government loan guarantees for particular activities in lieu of subsidies. In addition, borrowing can take place in forms that are not included in conventional measures of government debt. For instance, one of the circumstances leading up to the 1974 New York City default was the immense issue of so-called Tax Anticipation Notes and Revenue Anticipation Notes—issued on the strength, respectively, of taxes and of the proceeds from the sale of goods and services by the city government—designed to circumvent constitutional restrictions on borrowing, as well as conceal the overall volume of government borrowing from investors. These devices enabled the city to incur unsustainably large deficits that eventually resulted in its bankruptcy.

In the case of government borrowing, these considerations call for cooperation in gathering and releasing relevant data on borrowing—both on- and off-balance sheet—and on international capital movements.

• There must be no anticipation of a bailout in case the borrower cannot service its debts. Bailouts are the Achilles' heel of market discipline, as they free borrowers and lenders from the consequences of their actions. If the prodi-

gal borrower is a government, the bailout could come from the central bank, which could relieve the real burden of debt servicing by monetizing some of the public debt. Alternatively, assistance could come from another government, or from a supranational agency.

The problem of bailouts is a difficult one, since ex post there are often good reasons for a bailout—for example, to protect unfortunate bond-holders, or to prevent the enormous disruptive consequences for the financial system that might ensue from the bankruptcy of a national government. Ex ante, though, the promise of a bailout leads to a *moral hazard* problem; it reduces the incentive for lenders to monitor the borrower's behavior and take this behavior into account in lending decisions, as well as reducing the borrower's incentive to maintain solvency. A binding commitment to eschew bailouts might, therefore, be appropriate even if each individual bailout is, in itself, defensible. For example, the Maastricht agreement specifies that neither member countries nor the Community would bail out any financially troubled member country; the proposed European Central Bank would be independent of all national governments and prohibited from lending to them under any circumstances. Given the inconsistency between what is desirable ex ante and ex post, however, it is hard to convince market participants that such a commitment would be adhered to in the crunch.

• The borrower must respond to market signals. This condition is not strictly necessary for market discipline to be effective, since even if the borrower continued blithely along an unsustainable path, rational lenders would ultimately impose discipline by excluding it from further lending. However, this would be a very harsh form of discipline, associated with a financial crisis. Market discipline would work much more smoothly if the borrower responded sooner, by reining back excessive spending in response to the widening interest rate spread. In some instances, borrowers may even anticipate, rather than merely respond—that is, they rectify the fiscal imbalance *before* it undermines their credit rating.

Why might a borrowing government fail either to respond to market signals or to anticipate them? In particular, democratic governments may have very short time horizons, as they are primarily concerned with re-election, so they may have a bias toward excessive deficits that leave their successors with a large debt burden. There might even be a strategic element to this policy: a government might actually try to saddle its successor with a large public debt as a way of tying the successor's hand, limiting its ability to carry out spending that does not conform to the current government's preferences. There is also evidence suggesting that, if governments are assembled from weak coalitions, they are more likely to satisfy the coalition members' immediate demands for spending projects and tax relief at the expense of mounting debt. These imperfections of the public choice mechanism would also weaken governments' responsiveness to market discipline.

The experience of federal unions

The experience from federal unions offers various examples of the role of market discipline. There are wide differences in the degree of autonomy granted to the lower-level governments. For example, in Australia any borrowing by a state government must receive formal approval from a central government body. In Germany, likewise, the Länder have little fiscal autonomy. In the United States and Switzerland, there is no central restriction on the deficits and debt of the states or cantons, respectively, but there are other restrictions: all but 12 of the US state governments are subject to formal fiscal restraints, consisting of either a balanced budget requirement (of varying degrees of stringency), a debt limit, or both. In Canada, there are no formal legal limitations on borrowing by the provincial governments or their agencies.

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The international experience shows a diversity of successful arrangements, suggesting that there is no clear case for constitutional limits or central control of the deficits of lower-level governments. There is no apparent tendency for countries with stricter rules to have more appropriate fiscal policies. Indeed, in Australia, where state governments have perhaps had the least legal autonomy of any of those mentioned, there has been chronic concern over excessive borrowing by the two most populous states. By contrast, binding rules seem to have had little effect within the United States, where there is a diversity of different fiscal rules. A recent study found that states with more stringent fiscal rules had no significant differences in their levels of debt or borrowing, and that more stringent limits were often associated with one extreme or the other—that is, very high or very low levels of debt or borrowing (Jurgen von Hagen, March 1991).

Market-based discipline requires that interest rate spreads reflect differences in credit risk associated with different degrees of fiscal probity. In federal states where government units have some fiscal autonomy, markets do differentiate among them. For example, in Canada there are noticeable spreads among bonds issued by different provinces and their agencies. Some have argued that these spreads are too small to have a significant effect on fiscal policies. This may reflect a perception that any province on the verge of default would likely be bailed out by the federal government. However, the narrowness of the spreads may also indicate that governments do not wait for their deficits to lead to increased spreads, but react in advance to avoid facing increasing borrowing costs—as suggested by the frequency with which "preserving the province's credit rating" is given as a rationale for fiscal authority. The actual debt ratios of the provinces in Canada are, however, quite low on average, and differences may not be wide enough to lead to substantial differences in default risks. Interestingly, provincial budgetary imbalances are dwarfed by those of the federal government, perhaps consistent with some observers' view that "fiscal prudence is inversely proportional to the authorities' leverage over monetary policy, that is, the access to the inflation tax" (Bredenkamp and Deppler, 1990).

Some empirical studies of yield spreads on state and municipal government bonds in the United States found that deficits not only tended to increase the state's interest rate spread as predicted but that this effect also increased with the amount of borrowing. These and other similar results indicate that interest rates do incorporate information pertaining to the borrowing governments' behavior and the resulting credit risks.

Policy implications

The experience from federal unions suggests that there may be some role for market discipline of fiscal policy. The evidence suggests that, although market forces may have a restraining effect on government borrowing, this restraint is relatively weak in the case of national governments. National governments' access to credit (directly or indirectly) from the central bank may be especially important in this regard. Monetizing the debt is a way that an improvident government can be bailed out—not only at the expense of its own credi-

tors, but indeed of all other holders of debt denominated in the same currency.

Where the conditions for market discipline are not satisfied, there may be a case for direct control or supervision. Here, care must be taken, however, since some of the conditions that undermine market discipline may also thwart direct controls. For example, the kind of government that is likely to be unresponsive to market discipline, persistently incurring unsustainable deficits, is also likely to seek ways of avoiding surveillance and circumventing any direct legal limits on its deficits. It is important to recall, for example, that the New York City default of 1974 took place despite a constitutional balanced budget requirement.

Thus, when coordination, surveillance, and legal restrictions on deficits are needed to prevent unsustainable policies, they should be supplemented by doing what is possible to strengthen market forces. For example, capital market restrictions should, where possible, be removed in order to prevent a "captive market" and strengthen the market's role as a disciplining device. The relevant information bearing on a country's creditworthiness should be disseminated to market participants so that it can be incorporated into market prices. The costs and benefits of a bailout should be evaluated, and, where this is possible, the circumstances under which a bailout would occur, and the scope of such a bailout, should be determined in advance.

Although one probably cannot rely solely on market forces to prevent unsustainable behavior where governments are concerned, the financial markets have the potential to play an important disciplinary role. To the extent that institutions are designed to work with market forces, rather than attempting to suppress them, this is likely to increase their effectiveness, as well as enhance the efficiency and stability of the financial system. ■

Recommended further reading:

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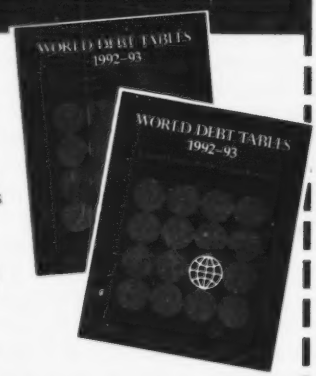
World Debt Tables 1992-93



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Coordinating Public Debt and Monetary Management

SÉRGIO PEREIRA LEITE

The interplay between financial sector reforms and public debt management strongly suggests that it would be imprudent to undertake financial reforms without due consideration of public debt issues. At the same time, it would be unwise to formulate a fiscal policy that ignores the importance of debt management for the development of financial markets.

As many countries, including several that formerly relied on central planning, have begun to implement financial sector reforms, one of the challenges facing them is how to coordinate monetary and public debt management so that they are mutually supportive. Indeed, the development of financial markets is an interactive and evolutionary process—financial reforms have implications for public debt management and, conversely, debt management can contribute to, or impede, the reform process and monetary policy implementation. Moreover, without active financial markets—particularly government security markets—there are few options for monetary management.

Financial sector reforms aim at improving resource allocation through increased emphasis on market signals. Interest rate liberalization, central bank independence, and a more competitive financial system are key components of a liberalized financial system. These changes in the way the financial sector operates, however, bring with them the seeds of contradiction between public debt and monetary policy objectives. For while most of the objectives of public debt and monetary management are common or complementary (see box), monetary policy goals are broader than those of public debt management; there are also short-term differences of strategy that may place monetary and public debt management policies at loggerheads.

In economies with liberalized financial systems and independent central banks, for example, it is not uncommon to find finance ministers complaining bitterly about high interest rates, or central bank governors harshly stating the need to reduce the fiscal deficit. There are also less publicized discussions on the access of the government to overdraft facilities at the central bank, on the maturity and profile of the public debt, and on intervention (and regulation) policies of the central bank in government security markets.

In a fully liberalized system, these divergences are part of the system of checks and balances and contribute to sound compromises and economic policies. During the process of financial reform, however, lack of coordination between monetary and public debt management can paralyze the reform process and result in costly slipups in policy implementation. The importance of adequate coordination never disappears, but it increases from the preparatory phase of the reform process to the middle (transitional) phase of the reform—where primary placement of government securities must have both public debt and monetary policy goals—before declining as direct central bank financing of the budget becomes marginal. This article analyzes the links between monetary and fiscal policy, suggesting how the central bank and the treasury can work together toward common objectives.

The pre-reform phase

The main objective of the initial phase of the financial reform is to set up the preconditions for successful financial liberalization. This phase generally includes measures to initiate the macroeconomic adjustment of the economy, to strengthen the banking system, and to modernize the central bank. The size of the budget deficits must be reduced to levels that are consistent with sound public debt and monetary policies.

Coordinating committee. The experience of many countries suggests that during the early process of developing and coordinating public debt and monetary management policies, it is useful to establish a committee comprising officials of the finance ministry and the central bank responsible for carrying out financial reforms. This coordinating committee is normally charged with:

- conducting a regular debt planning exercise aimed at setting quarterly and yearly targets for the sale of securities over the succeeding 12-month period; these targets should reflect government cash flow requirements, the demand for government securities, and monetary policy considerations;

• assessing the demand for government securities, both short-term issues, which are held mostly to meet liquidity management needs of financial institutions, and long-term bonds, which are preferred by investors such as pension funds and insurance companies;

• consulting with financial institutions to gauge their preferences regarding debt instruments to be sold at auction: In particular, decisions must be made on the term of the instrument; whether there will be a coupon; minimum denomination of bonds; auction procedures; frequency of the offerings; bearer or registered securities; physical issuance of bonds and bills; dealer duties and privileges; and information provided to market participants; and

• requesting studies and making recommendations regarding the development of the securities market, such as the regulatory/supervisory framework for trading in securities and settlement arrangements for government securities.

Other reform measures. Among other initiatives, reforms of the banking and payment systems are especially important because they require close coordination between the treasury and the central bank.

Banking reforms. Banks are traditionally major holders of treasury bills, thus allowing the central bank to conduct its monetary policy through purchases and sales of these securities in the market (open-market policies). However, these policies are effective only if banks are competitive and interest sensitive, conditions that are often absent at the onset of the financial reforms. In particular, the rehabilitation of poorly capitalized financial institutions with nonperforming loans often requires financial contributions from the government. This has traditionally taken the form of a swap of government securities for doubtful and substandard loans. Thus, to improve monetary policy implementation, government securities may need to be issued, which will increase interest costs and require close discussions between the central bank and the treasury to find a solution that is acceptable to both parties.

Payments system. Large transactions in government securities are not uncommon if the central bank uses open-market operations to regulate liquidity in the economy. In order for these operations to take place smoothly and safely, parties to the transactions should be able to transfer ownership of securities in a manner that is timely and closely coordinated with the transfer of associated payments. This requires the central bank, together with the finance ministry, to set up an adequate system of securities registration that is tightly linked with the payments system. Coordination is often achieved by asking the central bank—which is normally in charge of the payments system—to maintain the registration of government securities as part of its task as fiscal agent for the government.

The transitional phase

The transitional phase of financial reform generally involves making interest rates more responsive to market developments. During the transition phase, government securities are used for the first time for monetary policy purposes. They are sold at auction to (1) allow interest rates for government securities to reflect market trends; (2) provide a reference rate that can be used to set other interest rates; and (3) contribute to the control of reserve money.

Interest rates. An important question during this phase is to what extent the government (and the central bank) should try to influence interest rates, even if this is done through market, and not administrative, means. In a free market, interest rates are determined by supply and demand. The supply of government securities is basically determined by the size of the deficit and of debt rollovers, while the demand depends not only on economic conditions but also on the characteristics of the instrument itself, such as its liquidity. The interest rate on government securities, however, has an impact on the deficit, and influences other interest rates in the economy. Thus, the choice of an interest rate adjustment path, either through a flexible targeting of interest rates or through the targeting of monetary and credit aggregates, will be a source of discussion, and possibly disagreement, among officials in charge of public debt and monetary management.

Usually, this debate is carried out in terms of what to do if government financing needs exceed the amounts that the central bank feels should be placed with the market. The traditional wisdom is that, if this is a one-shot event, the central bank may wish to absorb the difference, preferably by purchasing the remaining securities at the average interest rate of the auction. If, however, there is a chronic divergence between the financing needs of the government and the capacity of the market to absorb public debt placements, the government must reduce its deficit to a manageable size. Here no other compromise is possible, as sustained absorption of government securities by the central bank would increase the money supply and lead to inflation and balance of payments problems. Up to a point, however, there is room for legitimate differences of opinion regarding the growth rate of public debt and the interest rate levels in an economy.

The amount of securities offered at each auction must be decided carefully by the coor-

The final objectives of public debt and monetary management are common or complementary

Public debt management	Monetary management
1. Minimizes the interest cost of deficit financing, while relying on voluntary, market-based means to finance the government.	Aims at achieving domestic and external stability of the national currency.
2. Contributes to limiting the inflationary impact of deficit financing.	Contributes to limiting the inflationary impact of deficit financing.
3. Helps the development of money and capital markets, and thus the future capacity of the government to finance its operations.	Helps the development of money and capital markets, and thus the future capacity of the central bank to conduct open-market operations.
4. Avoids short-term disruptions in financial markets resulting from public debt rollovers and large changes in outstanding debt.	Avoids short-term disruptions in financial markets resulting from public debt rollovers and large changes in outstanding debt.
5. Provides the central bank with the tools to carry out open-market policies.	Develops and uses market-based tools for monetary management.
6. Ensures that public sector borrowing is carried out at rates that fully reflect the opportunity cost of resources.	Prevents systemic financial sector crisis resulting from isolated real or financial sector events.

dination committee to ensure that monetary policy objectives are met. At this point in the development of the money market, the amount of securities placed at each auction must vary according to the monetary conditions at the time of the auction, as there is not yet a secondary market that would allow the central bank to smooth out seasonal liquidity movements. While it would be useful from the market development viewpoint to be able to standardize the size of the issues, this may have to wait for the final phase of the reforms.

Information requirements. A key factor in the quest to use government securities as an instrument of monetary policy is information on the amount of government securities maturing at each point in time, the characteristics of each type of government security outstanding, and the cash flow requirements of the government. Combined with data on the liquidity situation of the banking system and other major investors, this information allows debt and monetary policy managers, working together, to maximize their chances of finding an optimal strategy to minimize the cost of the debt without complicating monetary management.

The central bank and the treasury must cooperate closely in compiling this information. The treasury is the only institution that can put together meaningful forecasts of the cash flow requirements of the government. The central bank, on the other hand, is in daily contact with market participants and, thus, is in a privileged position to evaluate the market demand for securities. Details on the outstanding public debt are sometimes kept by the central bank and sometimes by the treasury. The combination of this information in a manner that is useful for monetary and public debt management is called liquidity forecasting; it is a key area of central bank activity when indirect monetary policy instruments are used. This activity cannot, however, be successfully accomplished without collaboration from the treasury.

Coordination of monetary policy instruments. A major concern during this phase is to ensure that all instruments of monetary policy are moving in the same direction. For example, in the early stages of financial sector development, the central bank is often a major source of funds to the financial sector. But the elimination of financial repression often expands opportunities for banks and other financial institutions to raise deposits from the public. Thus, it is reasonable at this juncture for the central bank to change its rediscount policy to limit it to providing liquidity to the market on a lender-of-last-resort basis only. Moreover, the central bank may want to limit its rediscounts to government securities. The central bank rate should be such as to provide a profit opportunity for financial intermediaries willing to engage in secondary market transactions. An adequate discount policy is also important to encourage banks to use government securities as collateral for their own interbank transactions. Other instruments that sometimes need to be adjusted to the new policy framework are reserve and liquidity requirements. For example, poorly designed reserve requirements may create temporary liquidity imbalances on those days when banks are checked for compliance with the requirements. The result may be large interest rate swings that disrupt both monetary policy and public debt management.

Financial market development. It is important to emphasize that the development of markets for government securities helps not only monetary policy but also fiscal policy and the development of financial markets in general. The government is typically the largest and most creditworthy borrower, so that government securities are relatively marketable and liquid. Once the market for government securities develops, then the market for somewhat less creditworthy instruments can follow.

During the transitional phase, the government may also want to consider converting all or at least part of its debt to the central bank into marketable securities bearing market-related interest rates. This will build up the stock of marketable instruments in the hands of the central bank, thus allowing it more flexibility in the conduct of monetary policy.

"It is important to emphasize that the development of markets for government securities helps not only monetary policy but also fiscal policy and the development of financial markets in general."

The consolidation phase

The final phase—the consolidation phase—aims at achieving an active and sufficiently deep secondary market in monetary instruments to permit the use of open-market policies as the main instrument of monetary policy. Other desirable targets are a broadening of the instruments available in financial markets by gradually introducing instruments bearing different characteristics and maturities, and further increasing competition by facilitating the entry of new institutions into financial markets.

Placement of treasury bills. Treasury bills will be placed by auctions. Once a secondary market has developed, the central bank will intervene in the securities market mostly through purchases and sales in that market, and not by varying the size of the primary issues. A long-term goal should be to regularize and standardize issue schedules to make it easier for market participants to establish a consistent bid strategy based on their analysis of market developments. The central bank should also consider the use of repurchase and reverse repurchase agreements whenever it needs to make short-term, reversible adjustments in financial sector liquidity.

During this phase, the financial markets should already provide reasonable liquidity for treasury bills without much help from the central bank. The liquidity of the treasury bills should be provided mostly by dealers that stand ready to discount these bills at a market-related discount rate. Access to central bank rediscount will, for the most part, be limited to dealers.

Government bonds. In the consolidation phase, the government may want to increase its efforts to place longer-term securities, which will again require close coordination between the central bank and the treasury. Several arguments justify such a strategy. The need to engage in frequent debt rollovers may be administratively inconvenient and may contribute to magnifying interest rate fluctuations or to generating a confidence crisis; it seems reasonable to finance projects that will take some time to mature by using long-term debt; and there is a considerable demand for risk-free, long-term savings instruments that could be tapped by the government.

It is important to note that the central bank normally has less interest in government bonds than in treasury bills. The reason is simple: it is easier to use short-term than long-

term securities in the conduct of monetary policy. Moreover, there is general agreement that monetary policy is only able to influence short-term interest rates, so it is natural that central bank attention will be more focused on treasury bills. However, it is also possible to use repurchase and reverse repurchase agreements of government bonds to carry out monetary policy. Again, some degree of coordination between the actions of the treasury and the central bank seems advisable.

Conclusion

In most countries, the central bank acts as financial adviser and agent for the government. For that reason, the central bank is often in charge of all operational matters regarding public debt management—including maintaining the book-entry system and a database on outstanding securities—as well as all matters related to auction procedures. Market intervention and regulatory issues are primarily central bank functions directly related to its responsibilities for monetary management and supervisory issues. The finance ministry, however, normally retains final responsibility for decisions on the amounts, types, and maturity of government securities that will be placed in the primary markets. Hence, without close coordination between the central bank and the finance ministry on public debt and monetary management issues, the road to financial liberalization is strewn with obstacles. In the early stages of the financial reform process, a coordination committee is critical to ensure a forum for discussions between the two institutions on matters of public debt and monetary management.

Further, both the finance ministry and the central bank should have units in charge of public debt management. In the finance ministry, the unit should be part of the treasury; it should monitor cash flow requirements and the performance of the central bank as debt manager. The centralbank will also need to have a unit in charge of operational matters related to the placement of securities. Finally, it is not only the budget deficit that places a burden on monetary management. The reverse is also true. Poorly conceived monetary instruments, such as reserve requirements and rediscount policies, can make it extremely difficult to develop a sufficiently deep and active government securities market. ■

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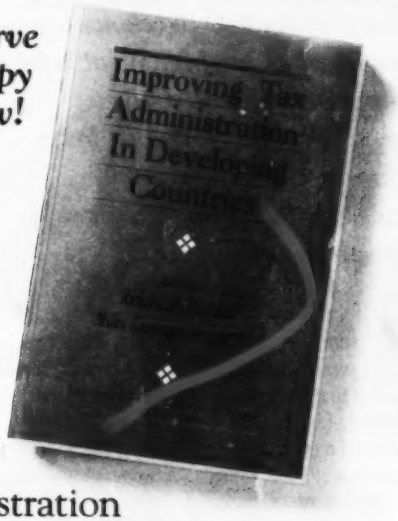

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Currency Substitution in High Inflation Countries

GUILLERMO A. CALVO AND CARLOS A. VÉGH

Currency substitution—the use in a given country of multiple currencies as media of exchange—raises major and often controversial policy questions: Should currency substitution be encouraged or discouraged? How does it affect the choice of a nominal anchor? What is its impact on the level and variability of the inflation tax? Unfortunately, there are few clear-cut answers to these questions.

Few national currencies survive the destructive power of high inflation. Like a crippling disease that leaves no part of an organism untouched, high inflation severely hinders the ability of a currency to perform its basic functions as a store of value, a unit of account, and a medium of exchange. Indeed, a currency whose value declines over time, often in an unpredictable manner, is ill suited to serve as a *store of value*. Nominal prices with an ever-increasing number of digits make the use of a currency as a *unit of account* inconvenient and devoid of much meaning. Sellers become reluctant to accept as a *medium of exchange* a currency with uncertain value.

Unlike an organism that is unique and cannot be replaced, substitutes for a sick currency are easy to come by. Some currencies, such as the US dollar, enjoy worldwide recognition and have earned a reputation for being relatively successful in maintaining their purchasing power over time. Not surprisingly, then, the public turns to a foreign money in its quest for a healthy currency. Currency substitution—the use of a foreign currency as a medium of exchange—is pervasive in high inflation countries. In many Latin American countries, for instance, the US dollar is widely used in conducting transactions, especially those involving "big-ticket" items. This explains the use of the term "dollarization" when referring to the phenomenon of currency substitution in Latin America. This term, however, is also frequently used to refer to the use of a foreign currency as a unit of account and a store of value.

Unfortunately, the extent of currency substitution is difficult to quantify since there are usually no data on foreign currency circulating in an economy. Only some rough, and admittedly crude, estimates exist. In Uruguay, for instance, theft reports filed with the police suggest that the ratio of dollars to domestic currency might be as high as three to one. In Bolivia, a recent study estimates that the ratio of circulating dollars to M2 reached 0.8 in 1985. Because of a lack of data, the share of foreign currency deposits in total financial assets (computed as M2 in domestic currency plus foreign currency deposits) is commonly used as a proxy for currency substitution. During the 1980s, this share surpassed 50 percent in Bolivia, Peru, and Uruguay, and remains very high, as documented in numerous studies. For instance, this share was almost 60 percent in Bolivia in 1990, and 83 percent in Uruguay in 1991.

The phenomenon of currency substitution is nothing new: large quantities of foreign currencies circulated in most of the economies that suffered hyperinflation after the two world wars. In Germany, for instance, it has been estimated that by October 1923, the real value of foreign currencies circulating was at least equal to and perhaps several times the real value of the domestic currency. Even though during most of these hyperinflations, governments attempted to impose foreign exchange controls to prevent a flight from the currency, the public managed to circumvent these controls and resorted to foreign currency to satisfy most of their needs.

The presence of currency substitution raises important, and often controversial, policy questions.

- Should currency substitution be encouraged or discouraged? One argument holds that interest rates should be increased to induce people to hold the local currency, while another advocates full adoption of a foreign currency as the only legal tender (as in Panama).
- The presence of foreign money implies that the relevant money supply—which includes the domestic value of foreign currency circulating in the economy—has a component that cannot be controlled. Might this hamper the ability of policymakers to reduce inflation, as it makes it more difficult to establish a nominal anchor? Understanding how currency substitution affects the choice of a nominal anchor is thus key in the fight against inflation.
- Since currency substitution results from the need to resort to inflation to finance chronic budget deficits, what are the effects of currency substitution on the ability of the government to raise revenues from money creation?

This article analyzes these important issues and examines the main policy choices.

Discourage currency substitution?

The policy of discouraging currency substitution tends to be favored by governments that rely heavily on revenues from money creation. If successful, such a policy would increase the demand for domestic money and thus attenuate the inflationary consequences of a given budget deficit.

A popular method of discouraging the use of foreign currencies in Latin American countries—most notably Brazil—consists of paying attractive interest rates on demand deposits. This is an ineffective method of discouraging the use of foreign currency because it amounts to paying interest on domestic money. The demand for domestic money is likely to increase, but if the fundamental problems leading to high inflation are not being quickly resolved, such a method only postpones the "moment of truth," and contributes to magnifying the eventual inflationary explosion.

An extreme measure designed to prevent the use of a foreign currency—which was adopted in Bolivia (1982), Mexico (1982), and Peru (1985)—is the forced conversion into domestic currency of the stock of foreign currency deposits in the domestic financial system. Such forced de-dollarization has often had effects opposite to those intended by the authorities. In Bolivia, for instance, the authorities expected that this measure would reduce the demand for dollars and increase the tax base for the inflation tax. Instead, it seems to have stimulated capital flight and driven the "dollarized" economy underground. With the stabilization plan of 1985, the official de-dollarization program ended.

Despite the negative assessment of measures destined to discourage the demand for foreign currency, the case for *encouraging* its demand is also less than obvious. An extreme form would be for a country to give up its own money and adopt a foreign currency (*full dollarization*). This type of solution is usually proposed after several failed stabilization programs. By removing the power to produce high-powered money from the central bank, it is hoped that inflation will be stopped in its tracks. In principle, a fully dollarized economy should inherit the inflation rate of the foreign currency that has been adopted. Such a system should also command higher credibility than a fixed exchange rate because it represents a higher degree of commitment to a stable money.

It has also been argued that full dollarization should provide the domestic government with more discipline. Presumably, this means that a government that cannot resort to inflationary finance will feel constrained to "put its house in order," rather than find alternative sources of finance (such as domestic debt). While there may be some merit to this argument—avoiding temptation is the first step toward abstinence—we tend to believe that policies follow discipline rather than the other way around. In other words, the exchange rate regime does not guarantee that a government will follow the fiscal policies needed to sustain such a regime, as countless balance of payments crises attest. The recent events in the European Monetary System certainly support this view.

Full dollarization may be criticized on several grounds. First, there is never a complete guarantee that the system will not be discontinued in the future. Liberia, for instance, had the same dollar-based monetary system as Panama until the mid-1980s, when political upheaval and large budget deficits forced a *de facto* abandonment of the system. A large external shock could also lead a government to renege on its commitment in order to recover the use of the exchange rate as a policy instrument. Thus, it would be naïve to expect that full dollarization would result in a quick equalization of prices and interest rates with the rest of the world, as credibility problems are not likely to go away immediately.

A traditional argument against full dollarization is that the government gives up revenues from the inflation tax. In many countries, seigniorage constitutes over 20 percent of total revenues. From a public finance point of view, replacing the revenues from inflation by conventional taxes could indeed lead to welfare losses if an inefficient tax system made it optimal to resort to the inflation tax. However, since governments may be tempted to renege on announced policies in order to secure short-term gains in terms of, for instance, higher economic activity, they may end up not behaving in an optimal manner. Therefore, "tying the hands" of the government through full dollarization could actually enhance welfare.

Perhaps a more fundamental criticism of full dollarization is that—unless domestic banks are also fully integrated with the "Fed," that is, the central bank issuing the foreign currency—the system will be forced to operate without a "lender of last resort." Optimists may actually argue that this is all for the better because the lack of a lender of last resort will impose stricter discipline on the domestic banking system. However, the most likely outcome is that, as soon as the domestic financial system threatens to collapse, rules will be relaxed and the banking system bailed out, which could lead to, at least, a temporary abandonment of full dollarization.

Short of full dollarization, the greatest drawback of encouraging the use of foreign money is that it would worsen the inflationary impact of a given fiscal deficit, by reducing the base of the inflation tax (given by the stock of real domestic money balances). In addition, if encouraging the use of foreign money takes the form of allowing individuals to hold "dollar" bank accounts, the same financial vulnerability mentioned in connection with full dollarization could be created.

In sum, there does not seem to be a strong general case for or against discouraging the use of foreign currencies. Hence, except under specific circumstances, policymakers should probably refrain from imposing measures designed to influence through artificial means the use of a foreign currency. Naturally, a greater use of domestic money that reflected increased confidence in government policy would be welcome. But, in this case, the greater use of domestic money would be a

consequence of good policies, and not an indication that encouraging the use of domestic money is a good policy in and of itself.

Choice of the nominal anchor

Since currency substitution is a by-product of high inflation, putting an end to inflation is a necessary condition to ensuring a return to the domestic currency. In an open economy, an inflation stabilization plan can be based on controlling either the exchange rate (exchange rate-based stabilization) or the money supply (money-based stabilization) thus letting the exchange rate float. The question arises as to the effects of currency substitution on the choice of the nominal anchor.

The conventional wisdom on this issue is that if there are substantial holdings of foreign money in circulation, fixed exchange rates provide a more effective nominal anchor. The reason is that, as a first approximation, the relevant concept of money includes holdings of the foreign currency. Thus, if the exchange rate is allowed to vary, the monetary authority would not be able to control the money supply (inclusive of foreign exchange) in terms of domestic currency. Conceivably, if domestic prices double, a depreciation of the domestic currency could accommodate the nominal money supply to the higher nominal money demand provoked by the doubling of prices. This line of argument is only strictly correct if both monies are perfect substitutes. This would be the case if there were no legal barriers to the use and free exchange of the two monies, and the two monies were fully and equally recognized as means of payment by everybody. Thus, once the exchange rate between the two monies is fixed, their risk characteristics are the same and the two monies become perfect substitutes. In this extreme case, the system has no nominal anchor.

An example may help to clarify the central issue. Suppose the US government erased the number "10" from $10 bills and let the market determine the price of the ex-10-dollar bills (that is, their exchange rate) against all other dollar bills. A moment's reflection shows that, given an exchange rate, total money supply is determined, which, in turn, pins down the price level. But if such an exchange rate doubles, the price level will increase to a new equilibrium. Hence, if the exchange rate is not fixed, the price level is totally undetermined; that is, the system is left with no nominal anchor.

In practice, of course, foreign currency is not a perfect substitute for domestic currency. If it were, a small increase in domestic inflation over foreign inflation should immediately provoke a total replacement of the domestic for the foreign currency, which has not been observed. However, the case of perfect substitution is still useful because it illustrates the fragility of the money supply as the nominal anchor in situations of extreme currency substitution. Moreover, perfect substitution might be a reasonable description of reality in the medium run, after enough time has elapsed for the financial system and the transactions technology to adapt to the use of the foreign currency. Under these circumstances, the gradual evolution of a currency substitution process under floating exchange rates might eventually lead to a highly unstable situation as the system loses its nominal anchor.

When currency substitutability is *imperfect*, the system is not left without a nominal anchor under floating exchange rates, since a given domestic money supply determines a unique price level. However, currency substitution still plays a key role in a money-based stabilization. By lowering expected inflation, a reduction in the rate of growth of the money supply reduces the domestic nominal interest rate, thus inducing the public to switch from foreign to domestic currency. The public's desire to sell foreign currency leads to an appreciation of the domestic currency. Moreover, the attempt by the public to increase real domestic money balances provokes a recession because, to the extent that domestic prices and wages are sticky, the real domestic money supply cannot increase, so that output must fall to equilibrate the money market. The higher the elasticity of substitution between domestic and foreign currency, the larger the appreciation of the domestic currency and the more pronounced the recession.

In the case of exchange rate-based stabilization, the domestic money supply can adjust instantaneously (assuming high capital mobility), which prevents the recession that results from money-based stabilization. Hence, a fully credible stabilization (in the sense that the public expects the lower rate of devaluation to be maintained for the indefinite future) will reduce inflation instantaneously with no real costs. If there is no credibility, currency substitution does not alter the boom–recession cycle predicted by some theoretical models and observed in chronic inflation countries.

To summarize, a high degree of currency substitution seems to significantly strengthen the case in favor of fixed exchange rates, particularly if an early deceleration of inflation contributes significantly to the credibility of the stabilization program. This is more likely to happen under predetermined exchange rates because the exchange rate "anchors" the price of traded goods.

Even if inflation is successfully brought down, evidence for Latin American countries (such as Bolivia, Mexico, Peru, and Uruguay) suggests that the demand for domestic money may not go all the way back to the levels observed prior to stabilization. The dollarization processes seem to exhibit "hysteresis," or irreversibility, in the sense that dollarization ratios do not fall once inflation has been reduced. For the same level of inflation, the public holds less domestic money than before.

This irreversibility in the process of currency substitution is most likely related to the role played by financial adaptation. High inflation forces the gradual development of new financial instruments and institutions (foreign currency deposits being one of the manifestations of this process) that decrease the demand for domestic money for a *given* level of domestic nominal interest rates. Creating new financial products is costly and requires a learning process. Once this "investment" has taken place, the public will continue to use these new financial instruments even if inflation falls.

A similar explanation has been advanced to explain the secular decline in the demand for currency in the United States. Clearly, once automated teller machines (ATMs) have been put into place on almost every corner, one would hardly expect a fall in the opportunity cost of holding money to a given level to cause currency demand to go back to pre-ATM-levels. Hence, to the extent that the "hysteresis" associated with currency substitution reflects such considerations, there is little that policymakers can or should do to reduce foreign currency holdings.

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Inflationary finance

The popularity of the inflation tax in developing countries is hardly surprising. Unlike conventional taxes, the inflation tax is costless to collect, easy to enforce, and hits low-income groups with no political clout the hardest. The inflation tax thus provides a convenient means of financing public spending in the face of inefficient and costly tax administration systems. Unfortunately for the revenue-hungry politician, the presence of a foreign currency provides an inexpensive and efficient way of evading the tax on domestic money balances. Hence, when the inflation tax becomes the main source of revenue—as best exemplified by the post-World War I European hyperinflations—governments go to extremes to ban the use of foreign currencies in a desperate attempt to salvage the last source of revenue. During the Austrian hyperinflation, for instance, the government established widespread exchange controls aimed at increasing the amount of domestic currency held by the public. The incentives to evade were so enormous, however, that even widespread controls could not prevent flight from the currency.

The possibility of switching from the domestic to the foreign currency implies that the inflation rate required to finance a given budget deficit is higher. This is because the availability of foreign currency reduces the demand for domestic money for a given level of inflation. Since the stock of domestic money constitutes the tax base for the inflation tax, the same amount of revenues can only be collected with a higher inflation rate. Moreover, the closer foreign currency substitutes for domestic money, the higher the inflation rate, because a given increase in inflation will provoke a larger reduction in domestic money demand. Since both the speed with which the public adjusts its money portfolio and the degree of substitution between the two currencies are likely to increase with a higher inflation rate, currency substitution may well lead to an explosive inflationary path. Currency substitution may also lead to more volatile inflation. Sudden spikes or inflationary explosions are bound to result from any exogenous shift in the demand for real money demand as a result of, say, changes in the availability of foreign currency or in transaction patterns.

In sum

The fact that currency substitution may lead to higher and more volatile inflation for a given budget deficit should not be taken to mean that currency substitution "causes" inflation. Rather, the implication is that the ready availability of sound currencies makes the use of the inflation tax less attractive than it would be otherwise. Measures designed to prevent the use of foreign currencies enjoy, at most, temporary success, and are often counterproductive. Such measures provide a clear signal to the public that the government has no intention of taking serious fiscal measures, which can only exacerbate the flight from the currency. Hence, the policy prescription in this area is simple (although in practice it might not be easy to implement for political reasons): attack the cause of inflation (the fiscal deficit) rather than the symptoms (currency substitution). Ironically, by making it more costly for a government to monetize its deficit, currency substitution may bring forward the day of reckoning. If that is the case, currency substitution might have played a beneficial role after all. ■

This article is based on the authors' IMF Working Paper WP/92/40, "Currency Substitution in Developing Countries: An Introduction," which was prepared as the introductory chapter for a special issue on currency substitution, edited by the authors, of Revista de Analisis Economico, *published in June 1992.*

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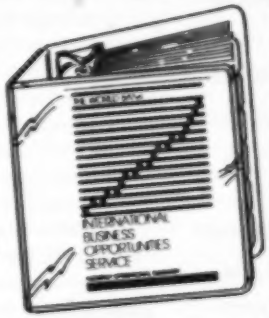

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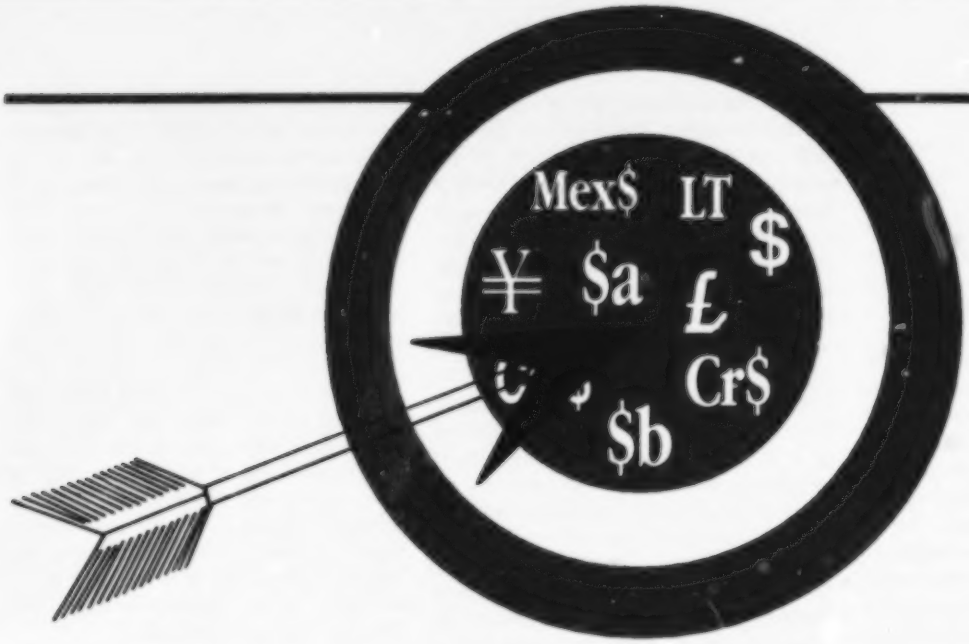

Targeting the Real Exchange Rate in Developing Countries

PETER J. MONTIEL AND
JONATHAN D. OSTRY

A number of developing countries have recently adopted real exchange rate rules as a means of maintaining international competitiveness in the face of high domestic rates of inflation. But will adopting such rules readily lead to hyperinflation as commonly feared? An IMF study explains how real exchange rate rules can easily have destabilizing effects on the inflation rate without leading to hyperinflation, and shows that such effects are difficult to overcome even when supplemented by an appropriate monetary policy.

At the time that most industrialized countries abandoned fixed exchange rates, the vast majority of developing countries continued to maintain them, typically linking their currencies to that of a major industrial country, usually the US dollar. In response to increases in international and domestic instability over the past fifteen years, however, policymakers in a number of developing countries believed that the costs associated with maintaining fixed exchange rates (for example, the difficulty of maintaining international competitiveness in the face of high domestic rates of inflation) were becoming large relative to the benefits usually associated with such regimes (relating primarily to the role of the exchange rate as a nominal anchor for the domestic price level).

Thus, among the developing country members of the IMF, the share of countries pegged to a single currency dropped from nearly two thirds in 1976 to less than one third in 1992. The counterpart of this change was a corresponding increase in the share of developing countries adopting more flexible arrangements. In most of these countries, the official exchange rate is changed frequently in accordance with some rule, which often links changes in the official exchange rate to the difference between domestic and foreign rates of inflation. Such rules are justified on the grounds that they help to maintain competitiveness, because they keep the real effective exchange rate close to its purchasing power parity (PPP) level (that is, the level at which a unit of currency can buy the same bundle of goods in all countries). For this reason they are generally referred to as real exchange rate rules.

Most commonly, adoption of a real exchange rate rule in a developing country, frequently in conjunction with an IMF/World Bank-supported adjustment program, entails that policymakers manage the nominal exchange rate in such a way as to keep the real exchange rate from appreciating relative to some initial baseline value. Such a policy can help to maintain the competitiveness of producers of traded goods, and hence is likely to expand a country's export markets and to increase its growth potential.

For example, active exchange rate management was used in the mid-1980s to prevent real exchange rate appreciation—and indeed to promote depreciation—in Brazil, Chile, Mexico, and Turkey among others—with the beneficial effect of a rapid expansion of exports for these countries. In contrast, substantial real appreciations in the late 1970s and early 1980s had a predictably negative impact on export performance in a number of developing countries, including Chile, Mexico, and Nigeria. In addition, reducing the *variability* of the real exchange rate (as under real exchange rate targeting) appears to have been one of the factors responsible for strong investment and export performance in a number of developing countries.

Despite the apparent advantages of active exchange rate management, certain unfavorable aspects of macroeconomic performance in the context of real exchange rate rules have led governments to adopt stabilization programs where the exchange rate is fixed. These so-called exchange-rate based stabilization programs have usually been justified on the grounds that only under a regime of fixed nominal exchange rates can the latter fulfill its traditional role as nominal anchor for the domestic price level. This may help to explain why, for example, in the high inflation "Southern Cone" countries of Latin America in the late 1970s, PPP-based rules were replaced by a preannounced crawl (the "tablita"); and why in the near-hyperinflation countries of Argentina, Brazil, and Mexico during the mid-1980s, the "heterodox" stabilization programs that were adopted featured a fixed nominal exchange rate as a major component.

In other cases, though, macroeconomic performance appears to have been more favorable, particularly when, as seems to have been the case in a number of developing countries (Colombia), activist exchange rate policies designed to offset inflation rate differentials were accompanied for long periods by fairly stable and moderate inflation. This suggests that the fear that real exchange rate rules always lead to hyperinflation may not be warranted, and that the precise nature of the effects of such rules on inflation merits further scrutiny.

Are such rules hyperinflationary?

The logic of the view that real exchange rate rules lead to a loss of control over the domestic inflationary process is clear enough. Adoption of such rules implies that the nominal exchange rate and, through the balance of payments, the money supply, are both indexed to the domestic price level. Shocks to the domestic price level will therefore tend to be fully accommodated by a faster rate of exchange rate depreciation and a faster rate of monetary growth. Under these conditions, therefore, there is no longer any exogenous nominal anchor to tie down the domestic price level.

While no one would dispute the fact that the adoption of a PPP rule for the nominal exchange rate prevents the latter from serving as a nominal anchor, there is room to disagree about the precise nature of the effect on the domestic inflationary process of the types of disturbances typically experienced by developing countries when a real exchange rate rule is in place. While hyperinflation appears to be a possible response to shocks, other outcomes—including once-off changes in the rate of inflation—are also possible, and perhaps more likely than hyperinflation in the context of many real world cases.

Adjusting to real shocks

When governments actively manage the exchange rate to achieve some target for its real value, macroeconomic adjustment to both internal and external disturbances differs sharply from that which occurs under fixed exchange rates. This is because in the latter case, changes in the real exchange rate can help to restore macroeconomic equilibrium when a shock occurs, whereas under real exchange rate targeting, some other variable will have to adjust. Since the types of disturbances experienced by developing countries (for example, terms of trade shocks related to commodity price changes, or various fiscal policy measures) frequently require a shift of resources from nontraded to traded goods, targeting the real exchange rate (which effectively fixes the relative price of these two goods) is likely to fundamentally alter the nature of macroeconomic adjustment in these countries.

To illustrate, consider how a developing country would adjust to an increase in government expenditure that fell primarily on nontraded goods (the nature of the adjustment would be similar under a favorable terms of trade shock, say a coffee or oil price boom). The increase in fiscal spending would tend to create excess demand for nontraded goods. With a fixed nominal exchange rate, and hence a flexible real exchange rate, the relative price of nontraded goods would rise to restore equilibrium. This would occur via an increase in the price of home goods relative to the (fixed—given the fixed exchange rate) price of tradables, that is, an appreciation of the real exchange rate.

Matters are quite different under real exchange rate targeting. In this case, the appreciation of the real exchange rate towards its new higher equilibrium level is no longer possible because the government is committed to adjusting the nominal exchange rate (effectively the domestic price of tradables) in such a way that the price of nontradables relative to tradables (the real exchange rate) is constant. To restore equilibrium in this case requires some substitute for the real exchange rate appreciation that would take place if the country followed a policy of fixed nominal exchange rates. It turns out that this substitute is a reduction in the real value of the private sector's financial wealth.

How does this reduction come about? As the price of nontraded goods rises in response to the increase in government spending, the authorities depreciate the nominal exchange rate to prevent an appreciation of the real exchange rate, thereby causing an adjustment in the overall price level. An increase in the price level indeed lowers the real value of private wealth as long as the latter is not fully indexed to price level changes, thereby reducing demand for all goods, including nontradables, and helping to restore internal balance.

This initial jump in the price level is not sufficient to restore macroeconomic equilibrium, however. The reason is that reductions in wealth are generally associated with increases in private sector savings, which, other things being equal, would generate a surplus in the current account of the balance of payments. The latter implies that the private sector is accumulating financial claims on the rest of the world. Over time, this creates additional excess demand pressure in the market for home goods, the elimination of which requires a continuous increase in the general level of prices. Only such a sustained increase in the price level will be sufficient to offset the impact on the nontraded goods market of the increase in private wealth coming through the balance of payments. Notice crucially, however, that although prices indeed rise continuously, the new inflation is *constant* in this process. The rise in government spending does not, in this

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For a more technical discussion by the authors, see "External Shocks and Inflation in Developing Countries Under a Real Exchange Rate Rule," IMF Working Paper WP/92/75, available from the authors.

case at least, lead the economy toward hyperinflation.

What, then, are we to make of the view that real exchange rate targeting leads to hyperinflation? The key to understanding how hyperinflation is avoided in the previous example relates to the disposition of the inflation tax on monetary balances, which in the first instance accrues to the central bank. If the central bank keeps the proceeds of the inflation tax (using them to accumulate claims on the rest of the world in its own right) or transfers them to the government (which uses them to increase its expenditures), then we have the outcome presented above, a higher but stable once-off increase in the rate of inflation, but no hyperinflation. If, however, the central bank transfers the proceeds of the inflation tax to the government, which then uses them to reduce its (lump-sum) taxes on the private sector, it is easy to see that hyperinflation can readily occur. This is because with the private sector effectively not paying the inflation tax (given the rebates it receives from the government), the accumulation of wealth that is the counterpart of the current account surplus is no longer offset by an erosion of the monetary component of wealth, that is, the inflation tax. This means that there is no end to the process of wealth accumulation, and hence no end to the excess demand pressure in the market for home goods, and thereby on the price level.

The case of hyperinflation, though, is likely to be a theoretical curiosum, since it assumes that the inflation tax will be rebated to the private sector in the form of reductions in other lump-sum taxes, something that is not very common in developing countries, where the inflation tax is typically used to finance the government's budget. Thus, from an empirical standpoint, it would seem that once-off changes in the inflation rate are more likely to be observed than hyperinflation.

Role of monetary policy

When the exchange rate cannot be a nominal anchor for the domestic price level, as under real exchange rate targeting, it is natural to think of monetary policy as substituting for the exchange rate in this role. Surely, since "inflation is everywhere and always a monetary phenomenon," it should be possible to design some monetary policy that would be able to offset the destabilizing effects on the price level that arise from the pursuit of a real exchange rate target.

It turns out, however, that there is relatively little that monetary policy can do here. There are really two cases to consider, depending on whether capital is mobile or immobile internationally. In the case of high capital mobility, the only available monetary policy instrument is the stock of credit. Suppose that the government decides to fix this stock in nominal terms, that is to impose a credit freeze on the economy, in order to bring about price level stability. This is admittedly an extreme example but it illustrates the issues. With a credit freeze in place and with the private sector having access to the international capital market, borrowers who find themselves unable to borrow domestically can borrow abroad instead. Because the private sector's overall demand for financial assets is unaffected by the credit freeze, the latter's only effect is to increase foreign borrowing by the private sector (i.e., to increase the surplus in the capital account of the balance of payments). The inflow that comes through this channel—like the inflows coming through the external current account—add to the money supply. Since inflation is indeed a monetary phenomenon, and since inflows through the balance of payments (which are the sum of the inflows in the current and capital accounts) will be the same with or without the credit freeze (because the demand for them is the same in either case and the perfect capital mobility assumption guarantees an infinitely elastic supply); monetary policy, therefore, will be powerless to affect the inflation rate under real exchange rate targeting.

Now it might be countered that the assumption of perfect capital mobility is to blame here, and, furthermore, that such an assumption is not really applicable to many if not most developing countries. This is not the case, however. Even with a closed capital account, monetary policy is unlikely to have anything but a short-run effect on the inflationary process under real exchange rate targeting. Although the argument is a little more complicated in this case, an example is nevertheless illustrative. Suppose policymakers impose complete capital controls, that is, they prohibit all international borrowing and lending. The likely outcome will be the emergence of an unofficial market (or parallel market) in which foreign exchange is traded at a market-determined price. With capital controls, policymakers can control the supply of money in the domestic economy because they can sterilize inflows that come through the current account of the balance of payments; they do not need to sterilize capital flows (which were potentially infinite under perfect capital mobility) because the capital account is assumed to be closed.

Suppose, then, in analogy to the previous case, that the government targets a zero growth in the nominal money supply in order to achieve price stability. In the short run, such a policy may indeed succeed in lowering inflation. But ultimately the private sector will attempt to satisfy its demand for money by trading in the parallel market. This will cause the market-determined price of foreign exchange to differ from the official price. Moreover, the difference between these two prices will tend to grow ever larger because, assuming that the underlying change in fiscal policy is permanent, the resulting inflow through the balance of payments (which is sterilized by the authorities) will be permanent. The need for perpetual credit contraction to offset reserve inflows means that the pressure on the market-determined exchange rate is continuous. Eventually, the ever-widening gap between official and market exchange rates must compromise the government's ability to maintain capital controls. At such a point, the capital controls have to be abandoned and we return to a world of capital mobility in which, as previously argued, the inflation rate is unaffected by the government's chosen monetary policy.

To conclude . . .

Real exchange rate targeting is likely to have a direct impact on the inflation process in developing countries. Monetary policy, however, is unlikely to be successful in mitigating these effects, except in the short run. Nonetheless, following a real exchange rate rule does not of itself imply that the country will experience hyperinflation in the presence of real shocks. ■

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A First Look at Financial Programming

News stories about IMF loan agreements are frequent. These stories often describe at length details of the country's "adjustment" program, including its main objectives and the policy measures that the government is planning to implement. Despite the frequency of the news releases, however, few outside the IMF are familiar with the basic concepts underlying these financial programs.

The term "financial program" is commonly used to describe adjustment programs that qualify for financial support from the IMF, although the term may also be applied in the absence of an IMF arrangement. In essence, a financial program is a comprehensive set of policy measures designed to achieve a given set of macroeconomic goals. These goals could simply be to maintain the current level of economic performance or, more often, they may aim to restore equilibrium between aggregate domestic demand and supply. (Disequilibrium between demand and supply typically manifests itself in balance of payments problems, rising inflation, and low output growth.)

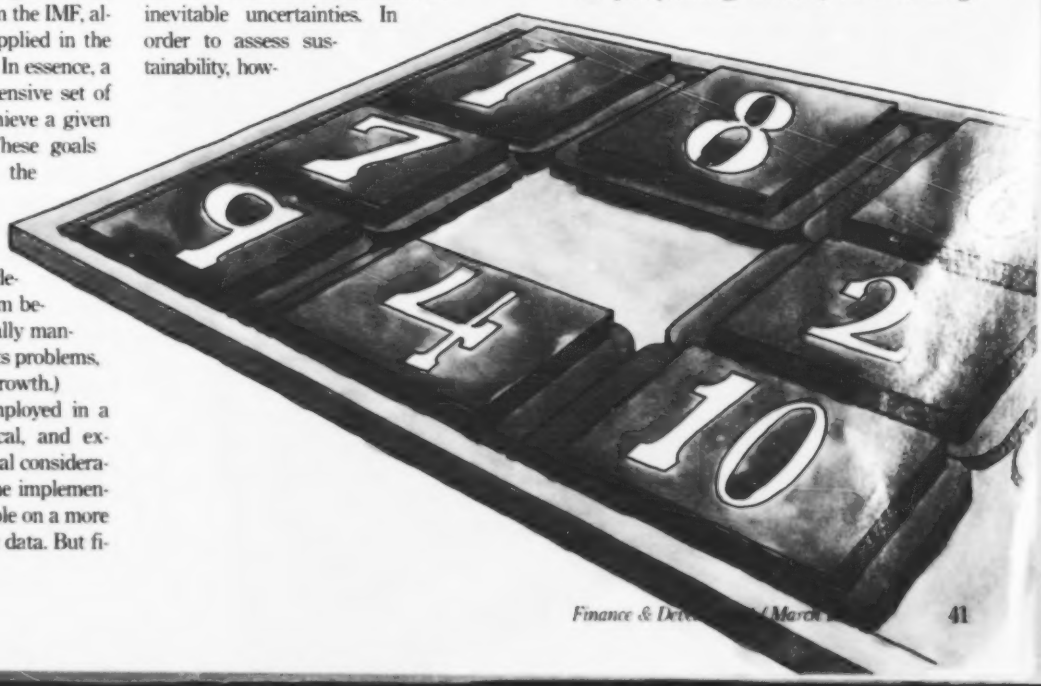
The measures most often employed in a program include monetary, fiscal, and exchange rate policies. As a practical consideration, financial data to monitor the implementation of such policies are available on a more timely basis than other economic data. But financial programs also incorporate other policy instruments, especially those aimed at increasing aggregate supply.

The distinguishing feature of a financial program is that it seeks to achieve an orderly adjustment, preferably through the early adoption of corrective policy measures and the provision of appropriate amounts of external financing. This should minimize losses in output and employment during the adjustment period, while eventually leading to a balance of payments position that is sustainable (a current account position that can be financed on a lasting basis with the expected capital inflows). Such a program should also be consistent with adequate growth, price stability, and the country's ability to meet fully its external debt-servicing obligations.

A financial program must, therefore, be set in a forward looking time framework. Typically, a government works out a program in considerable detail for a period of about one year. The treatment of prospects and policies in more distant periods is complicated by the lack of reliable information and inevitable uncertainties. In order to assess sustainability, however, a government must develop a medium-term scenario, which generally considers a time horizon of at least five years. These scenarios are by their nature less certain and often focus only on the broad features of the required external adjustment.

A proper framework is essential

An integrated system of macroeconomic accounts underlies the construction of a financial program. Data from national income and product accounts, the balance of payments, government finance statistics, and the monetary accounts all provide basic information needed to assess the performance of the economy and the extent of policy adjustment required. These data also provide a framework for policy analysis and help ensure consistency of policies. The accounting relationships highlight the fact that any sector that spends beyond its income must be financed by the savings of other sectors, and that excess spending by an entire economy is possible only when external financing is available. For policymaking, however, the accounting



framework must be complemented by behavioral relationships, which indicate the typical reaction or response of some of the variables included in the accounting framework to changes in other variables—for example, the impact of different levels of income and taxation on private sector spending.

These behavioral relationships, together with the accounting identities, form a schematic quantitative representation of the relevant economic processes. This framework can be used to assess the changes needed in policy instruments that are under the government's control to achieve given objectives for variables—such as inflation and the balance of payments—that are not directly under the government's control.

The design of a program is subject to many uncertainties and difficulties. Behavioral relationships may be difficult to identify and estimate with any precision. Analysis may be further complicated by difficulties in assessing the timing of the effects of policy changes, the impact of expectations on behavioral responses, and the interrelationships among measures in complex policy packages.

From framework to policy options

Within the framework outlined above, governments designing a financial program can explore various policy options. These options can, in turn, be framed around two basic accounting identities:

- gross national disposable income less domestic absorption (residents' expenditure on domestic and foreign goods and services) equals the external current account balance; and
- the external current account balance plus net capital inflows equals the change in net official international reserves.

The first identity indicates that an improvement in the external current account balance requires either an increase in a country's output or a reduction in its expenditure. Accordingly, adjustment policies may aim to increase output and reduce domestic expenditure to allow a greater proportion of output to be devoted to exports and a lower proportion of expenditure to imports.

The second identity, from the balance of payments, shows that any excess of expenditure over income, as reflected in a current account deficit, must be financed either by capital inflows or a drawdown of reserves.

From these basic accounting identities emerge various policy options, which can be grouped according to type: demand management, expenditure switching, structural, and those designed to attract capital inflows. To be effective, these policies must be constructed and implemented in a mutually supportive manner.

Demand management. These policies primarily aim to reduce domestic demand (or absorption) in order to narrow an external current account deficit and to lower inflationary pressures. Most prominent are monetary, fiscal, and incomes policies, but other measures—such as an exchange rate devaluation—may also help reduce expenditures.

In many instances, the source of excess domestic demand is the fiscal sector, in which case a combination of a reduction in public sector outlays and an increase in revenues may be called for. Domestic absorption can also be dampened by restraining monetary aggregates—for example, by introducing measures to change the volume of credit extended to the private and public sectors. Because monetary and fiscal policies are linked—the banking system often provides net financing to the public sector—fiscal restraint may be a key condition for limiting the growth of monetary aggregates.

Expenditure switching. Many programs seek to complement reductions in absorption by expenditure-switching measures such as exchange rate policy. By changing the relative price of foreign and domestic goods (from a resident's perspective, increasing the price of a country's exports and imports relative to the price of domestic goods), a devaluation aims to increase the global demand for domestic goods and services while discouraging imports. From the supply side, an exchange rate devaluation increases incentives to produce goods for export or that compete with imports. Redirecting output from domestic absorption to the external sector minimizes the negative effects of demand restraint on output—that is, any fall in domestic sales resulting from a decline in domestic consumption can be offset by increased export sales.

Structural. These policies aim to enhance supply to close the gap between domestic expenditure and output. In this area, a country designing a financial program will work closely with both the IMF and the World Bank. Policies can be divided between those designed to raise output by allocating existing resources more efficiently and those that seek to expand the productive capacity of the economy. In practice, it is difficult to distinguish between policies serving these two purposes. But conceptually, the former category includes all measures that bring prices back in line with marginal costs by reducing distortions arising from, for example, price controls, imperfect competition, taxes and subsidies, and trade and exchange restrictions.

To increase capacity, governments must implement policies that encourage investment and savings. For example, they must maintain realistic interest rates, reduce fiscal deficits, reallocate fiscal expenditures toward activity with the strongest benefits for growth and economic development, and generally implement policies that tend to guide new resources to investments with the highest rates of return. Such structural policies may take substantial time to show results.

Financing. The ability to attract capital inflows to sustain a current account deficit without running into debt service problems depends, among other things, on the judgement of potential lenders about the creditwor-

thiness of the country and how efficiently the borrowed funds are being used. If foreign borrowing is being used to finance investments that generate sufficient returns to finance the repayment of such funds, then debt servicing problems should not arise. When resources are used inefficiently, or to support domestic consumption only, then debt servicing problems are likely to occur. Changes in world economic conditions may also significantly affect the availability and cost of funds.

Considerations relating to external debt management have become an increasingly important part of program design. Key debt relationships must be monitored on a medium-term basis, under alternative assumptions about the country's own policies and the behavior of the external environment, including interest rates. The development of such medium-term scenarios has represented an important aspect of the IMF's work in helping countries design stabilization programs.

Financing may also take the form of a reduction in international reserves, although such possibilities are limited by the size of the initial stock of reserves. In extreme circumstances, some countries may finance external deficits by accumulating arrears. But arrears undermine creditor confidence, thereby complicating relations with external creditors. They also constitute payments restrictions and are thus contrary to IMF policies.

Putting it all together

Finally, the major sector accounts must be completed to provide an internally consistent—and feasible—scenario of developments that could result from adopting a given package of policy measures. More than one scenario may be considered; these might include a "baseline" scenario that reflects the impact of continuing existing policies, and a normative "program" scenario based on an explicit policy package designed to achieve a desired set of objectives.

Given the linkages among the accounts, an iterative procedure is likely to be required to ensure a consistent program. The following steps demonstrate how a financial program might be prepared:

Evaluate economic problems. An understanding of the economic, institutional, and sociopolitical structure of the economy and recent economic developments is essential for forecasting and policy analysis. The government must identify the type of policy instruments available, and diagnose the nature, source, and seriousness of the economic imbalance. For example, the appropriate policy response might be different for self-correcting imbalances than for more permanent ones, as well as for those originating from fiscal excesses as opposed to those resulting from terms of trade deterioration. The dimensions of the problem and availability of financing will also have an impact on program options.

Identify exogenous factors. External sector forecasts, for example, must take account of developments in the world economy, including prospects for commodity and other foreign trade prices, world interest rates, and output and demand growth in partner and competitor countries. Forecasts of these variables can be obtained from private, government, and international trade organizations (from the IMF's *World Economic Outlook*, for example). Nevertheless, a considerable degree of uncertainty must underlie these forecasts. It is thus useful to undertake sensitivity analyses of the effects of deviations from projected levels of some of the more important external variables.

Set preliminary targets and develop a policy package. The outcome of a baseline scenario, reflecting existing policies, can provide a basis for establishing appropriate targets for the program. A program scenario would include specific targets and policy measures for their achievement.

A government typically sets targets for the balance of payments (in terms of the current account balance or the level of international reserves), prices, and output. These targets should be consistent with a viable balance of payments position in the medium term.

Prepare sectoral forecasts. There are many possible approaches and starting points in developing a scenario. And the need to adjust the sectoral forecasts to ensure accounting and behavioral consistency may involve difficult policy choices.

For example, assume that a government has made preliminary projections or set targets for prices, real output, and the change in net international reserves. The implications of these projections for the external sector can be verified by forecasting values for exports and capital flows and deriving imports residually from the balance of payments identity. But in a second round, the derived import figure must be made consistent with the demand for imports at the projected levels of output and prices (a behavioral relationship). If, for instance, the demand for imports is greater than the value of imports derived residually, some adjustment must be made. The government has a number of choices:

- increase the foreign exchange available to support a higher level of imports, either by adopting policies to raise export receipts or by seeking additional financing;
- lower the initial projection or target for net international reserves to allow for a higher level of imports;
- reduce the initial projections or targets for prices and output to lower the demand for imports; and
- do some combination of the above.

Review desirability of use of IMF resources. Programs that are supported by IMF resources include performance criteria to ensure that these resources are disbursed only when programs are being implemented satisfactorily. Quantitative performance criteria commonly relate to such macroeconomic variables as overall domestic bank credit, net domestic bank credit to the government (or public sector), nonconcessional external borrowing, and net international reserves. Values for these variables should be based on the results of the government's program scenario.

Other kinds of policies may also be subject to performance criteria. In this context, additional understandings affecting the exchange and trade system, including measures relating to exchange rate policy and the reduction or elimination of external payments arrears, are important. Disbursements of IMF resources can also be subject to completion of a review, which typically monitors structural and other policies that may not be amenable to quantitative performance criteria.

Conclusion

Where macroeconomic imbalances exist, some form of correction must ultimately be taken to bring claims on resources in line with those available. If deliberate policy actions are not taken, the adjustment is likely to be disorderly and inefficient. For example, reserves may be depleted and creditors may become unwilling to lend further to a country. The adoption of a financial program, particularly when supported by the use of IMF resources, offers a country the possibility of an orderly adjustment that minimizes losses in output and employment and ultimately restores the balance of payments to a sustainable basis. ■

This article was prepared by current and former staff of the English Division of the IMF Institute, with contributions from Jeffrey M. Davis, Leylâ U. Ecevit, and Karen A. Swiderski. *A more detailed review of the framework for financial programming can be found in "Theoretical Aspects of the Design of Fund-Supported Programs," IMF Occasional Paper No. 55, $7.50. Practical aspects of financial programming are reviewed in more detail in "Financial Programming and Policy: The Case of Hungary," IMF Institute, August 1992, $17.50. Both are available from IMF Publication Services, Washington, DC 20431, USA.*

Does Petroleum Procurement and Trade Matter?

The Case of sub-Saharan Africa

MIGUEL SCHLOSS

A major portion of sub-Saharan Africa's foreign exchange earnings are devoted to the procurement of petroleum. This situation could be ameliorated: a revamping of policies and practices in hydrocarbons procurement and distribution could yield savings in the region of an amount significantly greater than yearly net disbursements of World Bank loans and credits to all the continent combined.

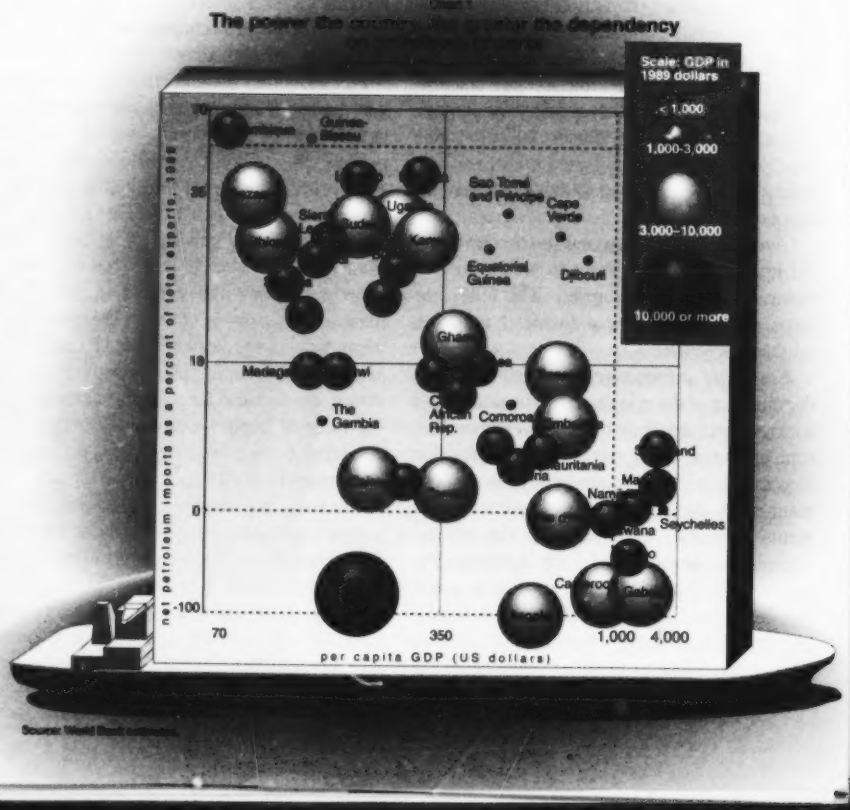
Petroleum products play a pivotal role in sub-Saharan Africa's economic development. Their purchase absorbs 20–35 percent of export earnings for the bulk of the countries in the region, and generates approximately 40 percent of tax revenues—thus constituting the single largest item in the balance of payments and fiscal revenues for most countries in this region. Although the primary energy balance is currently dominated by household consumption of fuelwood, petroleum products are the most important source of commercial energy, supplying approximately 70 percent of commercial energy requirements; and they are likely to be the fastest growing portion of the region's energy balance as the continent's modernization unfolds.

As the region becomes more developed, the demand for energy will also grow, thus setting up a vicious circle: Economic growth will be needed to pay for the expanding oil bill, and more imported fuel will be needed to generate economic growth. These countries must make fundamental policy choices with respect to the petroleum industry if they are to escape this self-defeating cycle.

Can savings be generated?

Except for Angola, Cameroon, Congo, Gabon, and Nigeria, all countries of sub-Saharan Africa are net importers of crude oil or petroleum products. Data comparing per capita GDP to oil imports (Chart 1) show that the lower the per capita GDP, the higher the percentage of net imports represented by petroleum. Greater efficiency in procuring and distributing petroleum products would reduce the amount of funds these countries devote to paying their oil bills, thus freeing those resources for other uses and potentially reducing the poverty level of these countries.

A World Bank-sponsored survey, financed by the Italian Government, on the rationalization of the supply of petroleum products in sub-Saharan Africa estimates that, for the whole of the region, a rational system of oil procurement and distribution could generate savings of about $1.4 billion a year at 1989–90 prices. This amount is greater than total World Bank annual disbursements of adjustment policy loans, and close to 50 percent higher than the net disbursement to the entire region combined. These savings represent the difference between the actual cost of



supplying petroleum products to consumers (either through imports or by refining crude) and a benchmark cost corresponding to procuring these products from world markets under competitive conditions. The figure also includes savings generated by improvements in internal distribution systems.

The potential savings can be better understood if the three components in the supply chain—procurement, refining, and distribution—are considered separately, and the actual prices at each stage are compared with international (freely traded) equivalents (Chart 2).

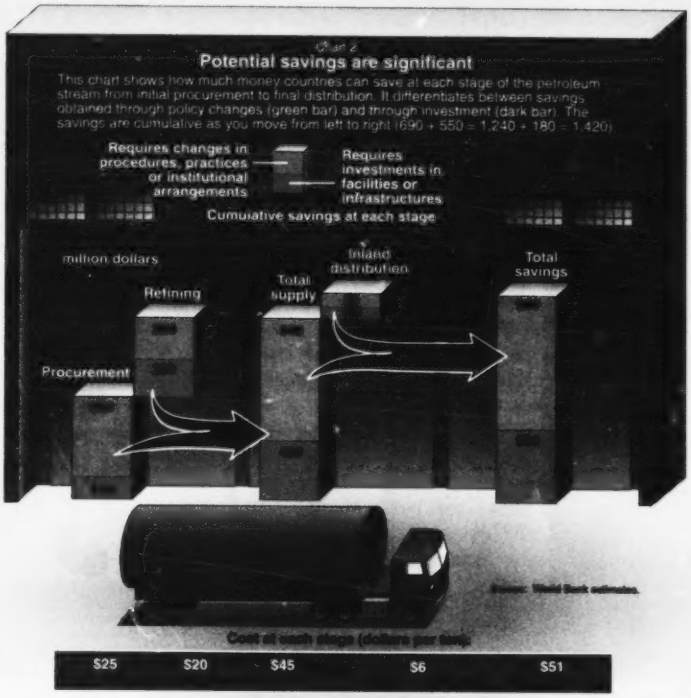


Chart 2
Potential savings are significant
This chart shows how much money countries can save at each stage of the petroleum stream from initial procurement to final distribution. It differentiates between savings obtained through policy changes (green bar) and through investment (dark bar). The savings are cumulative as you move from left to right (690 + 550 = 1,240 + 180 = 1,420).
Requires changes in procedures, practices or institutional arrangements
Requires investments in facilities or infrastructures
Cumulative savings at each stage
million dollars
Refining
Total supply
Inland distribution
Total savings
Procurement
$25
$20
$45
$6
$51

Procurement is the most promising area of savings, constituting about half of the potential reduction of foreign exchange claims. Inefficiencies currently arise from a lack of foreign exchange, poor credit standing, and inappropriate bidding procedures. All of these are interrelated factors, and symptomatic of monopoly control and government interference. Indeed, the greatest supply inefficiencies exist in countries where governments are most involved in petroleum procurement (Chart 3).

To encourage efficiency, procurement should take place through competitive bidding. Prices of entering petroleum products should be equivalent to import parity prices—derived from prices on international markets plus transport—and should reflect economic costs, not hidden margins or subsidies. Within the framework of economic adjustment programs, countries should plan ahead and allocate the foreign exchange to pay for its oil imports to avoid small shipments and high financial costs.

Refining holds promise of being the second largest source of cost reductions, responsible for approximately 40 percent of total savings. Currently, refining in sub-Saharan African countries is carried out in old, small topping units using simple techniques (hydroskimming) with little potential for economies of scale. For the most part, they are poorly maintained and underutilized, produce refined yields that are insufficient to satisfy domestic demand, and generate a product mix unsuitable for local markets. The result is that locally produced petroleum products are not competitive vis-à-vis direct imports from nearby producing and refining centers (the Gulf and possibly the Republic of South Africa on the East coast, and the Caribbean or even the Mediterranean on the West coast).

Inland distribution is the third area of potential savings. Inefficiencies arise from the extensive use of road transport instead of rail, poor storage, dilapidated infrastructure, and inadequate market competition. Infrastructure rehabilitation, requiring new investments, is needed, particularly in the case of railway lines and storage facilities.

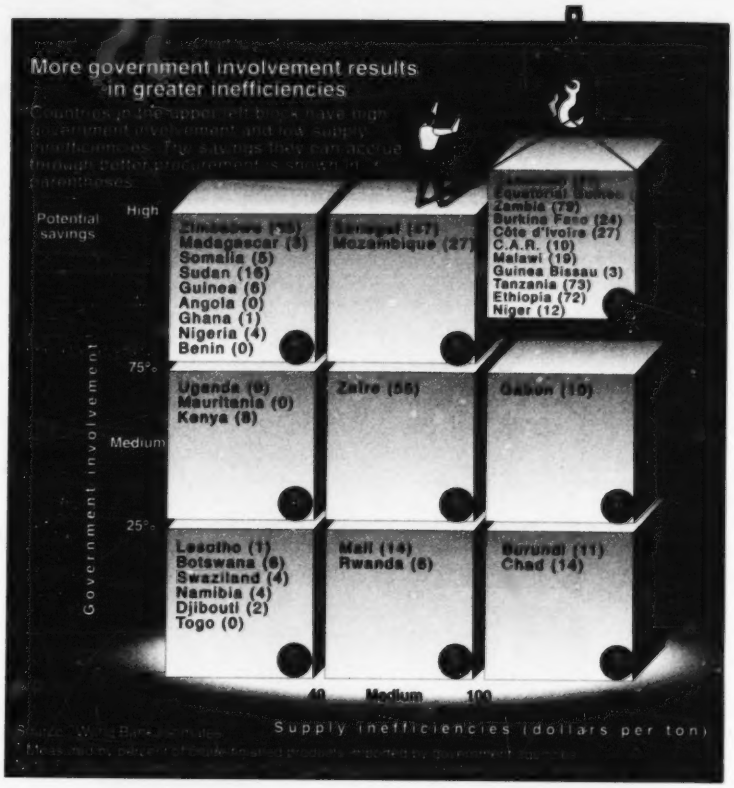
In total, close to 65 percent of potential savings can be realized through changes in operating procedures, institutional arrangements, and refining restructuring or closures, while the remaining 35 percent will require investments in infrastructure. There are clear advantages to be gained from reorganizing distribution over subregions of several countries, thus benefiting from economies of scale. Given the size and location of consumption centers, this restructuring would necessarily cause supply lines to cut across national boundaries, making countries within a subregion more reliant on one another. This is far more cost effective than the existing fragmented system, and would require the active cooperation of the governments involved. But as the experience in other parts of the world (and even some African countries) suggests, the number of operators in the oil industry is such that neither size nor location of a country impedes the ability to realize the benefits of open competition.

The actual savings will depend on a variety of factors. Chief among them are location (with countries in the interior having a larger share of benefits accruing from revamped distribution arrangements, and coastal areas benefiting more heavily from improved procurement arrangements) and petroleum prices. It should also be noted that the above- mentioned analysis was carried out with benchmark world oil prices of 1990, which were far lower in nominal terms than average world oil prices over the past ten years. If prices were to increase, the potential savings could be commensurately higher—for example, close to three times the above-mentioned figure if one were to use 1982 as a benchmark, when prices were triple their current level. More importantly, the greater the inefficiencies of petroleum procurement and distribution arrangements, the greater the potential for reducing the exposure to international price changes through improved hydocarbons trade arrangements.

Institutional and policy imperatives

The inescapable conclusion is that hydrocarbons procurement and distribution must be opened to the discipline of greater competition. Indeed, the experience recorded in other regions (Western Europe, Southeast Asia, and, currently, Latin America) that have allowed numerous available suppliers to compete in their markets suggests that a policy change in Africa along these lines would provide significant benefits to the continent. Well over half of the savings estimated in the survey require no initial investment outlay, but would result from opening the regulated markets to competition. Compared with the benefits that might be obtained through energy conservation, or even with the financial resources stemming from structural adjustment, the benefits from rationalizing the supply and distribution of petroleum products appear significant and certainly no more difficult to attain, given the small number of actions and institutions involved.

These policy decisions will also determine a country's ability to attract capital to finance the investments required to realize the remainder of the identified potential savings. Government policies should be modified, not



only to attract risk capital for oil exploration and production but also to obtain more rational wholesale and dealer margins, to eliminate cost-plus systems in refining and distribution operations, and to raise financing for the required rehabilitation projects. Open market competition has the potential to:

- lower prices to consumers (industrial and other);
- shake off habits, attitudes, and unsuitable techniques, all of which are wasteful; and
- increase accountability, the lack of which has kept inefficient operators in business.

Institutional arrangements. Following the wave of nationalism in producing countries in the 1960s and 1970s, governments created national oil companies with the aim of capturing a large portion of oil rent. The result is that throughout most of the region, governments control the sector through public enterprises or through joint ventures that cover even the operational and commercial side. In many cases, public or mixed enterprises own terminals, refineries, or depots, and have a monopoly over procurement and distribution within the country. In retrospect, public enterprises have failed to achieve governments' objectives, and market competition and more efficient private management could bring better results.

Pricing. There are two levels at which decisions in the pricing of petroleum products are of importance. The ex-refinery price (cost of crude plus refining and storage margins) provides signals to producers, and the retail price (ex-refinery price plus distribution and marketing margins and consumer taxes) provides signals to consumers. Inappropriate retail price setting results in two types of inefficiencies: when prices are set above industry costs, creating unnecessary rents, consumers absorb the difference; when retail prices are lower than production costs, the industry, in effect, subsidizes consumers.

Ex-refinery prices should be as close as possible to prices in the nearest international market. The inability of governments to adjust ex-refinery prices to changes in the international market and to remunerate the oil industry commensurately has created severe financial losses, delayed investments, reduced production capacity, and frightened off newcomers—thereby compromising both the country's security and economic activity.

The average level of retail prices paid by consumers should be related to the degree of competition a country faces within its economic region. Subsidies should be eliminated, or, if necessary, remain limited to specific regions or products rather than being built into the general pricing schedule. Taxes and, in turn, consumer prices should be set in such a way that they provide incentives for operators to function and invest.

Investment policies. The issue of increasing the private sector role relates to the need to introduce efficiency into operations, obtain risk capital, and improve the creditworthiness of energy companies so that they can finance required projects. Considering the region's significant debt problems and the global demand for capital, public companies will be unable to raise sufficient capital to develop energy supplies. Opening the industry could help break countries' continuing isolation from technical changes that are sweeping international markets.

Conclusions

As in other areas, the policy lesson is clear. Governments must get out of activities that competitive markets do best—producing and allocating goods and services. This is particularly true in such an entrepreneurial, volatile, and dynamic industry as the oil business. As experience in other parts of the world strongly indicates, the free access to supply and distribution of various economic agents, rather than privileged monopoly (be it private or public), is without question a better and more economic solution for the continent.

More broadly, the financial drain resulting from petroleum procurement and distribution are of such magnitude that they inevitably dull the benefits of adjustment processes, crowding out (or perhaps more appropriately, taxing) the surpluses that these economies could generate for sustained investments for social development, and severely strapping the economies of foreign exchange availability and vital contact with world trade.

No amount of foreign financial and technical assistance can overcome such hindrance. Without foreign exchange to pay or to be paid for goods and services sold across national boundaries, enterprises are cut off from customers, suppliers, and financiers of investment and trade transactions. Development financing and technical assistance, however well conceived, are not substitutes or shortcuts for the rich resources of talent that can be mobilized for solving financial, market access, technical, and other problems so vital in today's competitive world trade situation. Accordingly, the entire issue of downstream petroleum trade, particularly the huge economies to be derived from it, needs to be put much higher in the policy agenda of the parties concerned if the economic potential of the region is to be realized. ■

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BOOKS

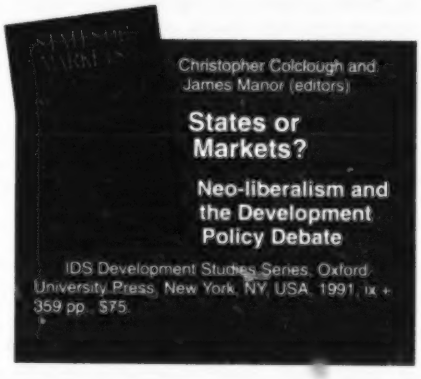
Imperfect Markets or Imperfect Governments?

Are development objectives better served by (imperfect) markets than by (imperfect) states? According to one approach to development policy—termed "neo-liberalism" in this book, and deemed to be the prevailing orthodoxy at the World Bank and IMF—the answer is an unqualified "yes." The 15 papers in this book try to test that answer.

It is plainly preposterous to say that markets alone can deliver all that could reasonably be wanted out of economic development; that position is easy to dismiss, as a number of papers in this volume show. It is also hard to accept as a characterization of what the World Bank and IMF advocate and do; virtually all of their lending is, after all, to governments.

So the various authors of this book might be accused of setting up and knocking down a straw man. But that would be unfair, since a number of these authors are actually struggling with one of the most difficult and important issues in development policy: the optimal level of state intervention. During the 1970s and 1980s, a number of economists (Balassa, Bauer, Krueger, Lal and Little, among others) advocated far greater reliance on market forces in shaping economic development than has been typical of government policies in developing countries. Their views were influential at the Bank and IMF. The authors of this volume argue that the policies advocated by these "neo-liberals" have been neither well supported by theory or evidence nor particularly successful in practice. Instead, they advocate a "structuralist" approach, emphasizing the scope for successful state intervention in industry and trade, with the specific forms of intervention being determined by country specific circumstances.

While unhesitatingly critical of the neo-liberal policy agenda, the book is quite eclectic in method. The criticisms of reform policies relate in part to issues that lie well within the gamut of the mainstream theoretical and empirical underpinnings of the reform agenda (the determinants of long-run growth; the existence and significance of increasing returns to scale; the dynamics of market adjustment; the causes of unemployment; behavioral responses to policy reform) and partly to issues of varying importance that have been largely neglected by the mainstream (state ideology; class structure; the human dimensions of workplace organization; political freedoms; the politics of reform). For example, Davis Evans' chapter brings out both types of criticism in the context of the neo-liberal agenda for trade policy reform. But these authors are at their best when they discuss specific policy reform experiences rather than theory. The chapters by Charles Harvey and


Christopher Colclough and James Manor (editors)
States or Markets?
Neo-liberalism and the Development Policy Debate
IDS Development Studies Series. Oxford University Press, New York, NY, USA. 1991. ix + 359 pp. $75.

Raphael Kapinsky are good examples. I would particularly recommend Harvey's chapter for its analysis of the political and economic factors that determined whether or not reform programs were sustained in Africa during the 1980s.

The authors correctly point out in a number of contexts (David Evans on trade, Michael Lipton on agriculture, Christopher Colclough on education, Gerald Bloom on health, among others) that much of the neo-liberal policy agenda rests on empirically testable assumptions. They are often quite effective at pointing out the inadequacies of the past empirical basis for policy reforms; offering convincing new evidence is clearly more difficult. (For example, while Colclough is right to point out the need to be wary of the estimates that are often quoted for the rate of return to schooling, his own revisions are a strictly back-of-the-envelope effort, which has no more obvious credibility as a guide to policy.)

It is unfortunate that the various sides in this debate have often taken a one-dimensional view: you are either (1) for states and against markets, or (2) for markets and against states. These extremes are simply untenable. As both Michael Lipton and Robert Chambers point out in their chapters in this volume (both in the context of rural development), there are potential gains from combining liberalization with an expanded, though changed, role for public action. The problem is not "too much government" but too much of government doing the wrong things; producing trucks when they should be providing roads; suffocating enterprise and initiative when they should be encouraging it. As Robert Chambers puts it: "The task is to dismantle the disabling state . . .[and] . . . establish the enabling state" (pp. 276–7).

Thus, what these authors seem to be striving for is a kind of "market friendly" interventionism, guided by a far more pragmatic, and wholly undogmatic, approach to development policy. Clearly, the old structuralist faith in states is starting to be healthily constrained by a better understanding of the capabilities of government. This approach will, presumably, avoid undue pre-commitment on the "states" or "markets" issue, and it will almost certainly leave room for both allocative instruments.

That seems like a palatable enough conclusion, on which there will surely be wide agreement. But it is barely a start to the task of forming good policies. Among other things, we will also need a normative theory of policy, clearly spelling out objectives and constraints. This will identify appropriate policy instruments, guide evaluation, show what data are needed, and make clear what is being assumed when such data are unavailable. And it will need to be a broader framework—in terms of what it allows as both "objectives" and "constraints"—than has typically propelled the neo-liberal policy agenda. Without that framework, there is a real risk that, in practice, this emerging "neo-structuralism" will turn into another policy pastiche in which just about anything goes, and just about nothing works.

Martin Ravallion

Robert Wade

Governing the Market

Economic Theory and the Role of Government in East Asian Industrialization

Princeton University Press, Princeton, NJ, USA, 1990, xx + 452 pp., $65 ($18.95 paper).

The extraordinary performance for the past two decades of the East Asian economies of Japan, Korea, Taiwan Province of China, Singapore, and Hong Kong has contributed significantly to our understanding of the process of economic development. At first, consistent with the observation that rapid export growth lay at the heart of success (and consistent with the prevailing political and ideological winds), the East Asian miracle was interpreted as a vindication of the neoclassical paradigm of development and the central importance it ascribed to free markets, "getting the prices right," and sound macroeconomic management but otherwise limited government.

Yet this interpretation did not square with the observations of those with a more intimate knowledge of East Asia: that most of these societies appeared tightly controlled—economically as well as politically. Over the past decade, debate over the role of the state in East Asian development has become increasingly more vigorous.

Robert Wade's book represents a milestone in that debate. The book combines a definitive analysis of the policy underpinnings of Taiwan's economic development with a conceptually sophisticated challenge to the neoclassical development paradigm.

Wade is thoroughly persuasive on three central points. The first is that the roots of Taiwan's economic success lie in its history and politics. Both the import substitution of the 1950s, and the earlier experience of industrial and agricultural development under Japanese rule were crucial in providing Taiwan with an industrial base on which to build. Its political legacy was just as important in shaping the class structure of Taiwanese society in a way that ensured that the island's abundant entrepreneurial energy would be directed to productive industrial investment.

The centrality of this industrial investment to Taiwan's success is the second point on which Wade is persuasive. Unlike most of the existing literature on Taiwan, Wade emphasizes the important relationship between investment and long-run economic growth, highlighting the island's remarkably high levels of investment of around 25-35 percent of GDP annually since the mid-1950s.

Finally, Wade is convincing in arguing that a neoclassical explanation for Taiwan's success that gives primacy to market liberalization as opposed to government activism is *prima facie* inadequate. He details a broad array of economic interventions by Taiwan's government that run contrary to the neoclassical canon—state investment in industry and other forms of sectoral targeting, import restrictions, export promotion, discretionary controls over foreign investment, a strictly controlled banking system (even to the point of inflexibility), and the creation of industry-specific technology support institutions. Wade makes a good case for his view that, while market forces, at home and abroad, have been given much play, the government has also played a central role.

Wade has some clear (and provocative) ideas about which nonneoclassical interventions matter for development—and which do not—both for Taiwan and more generally. He distinguishes between "free market" and "simulated free market" theories of East Asian success (the latter makes some room for activist government, but only in functional, market-enhancing interventions), and his own "governed market" theory, which calls on government to undertake and maintain control over some central tasks. For Taiwan, Wade emphasizes in particular the crucial roles of government in initiating exports and nurturing selected upstream subsectors of industry.

Wade recognizes that the evidence in support of his conjectures remains weak. There is no convincing evidence one way or the other as to whether direct government interventions accelerated exports beyond what would have been achieved anyway, given the broader incentive policies. Further, Wade recognizes that the interventions that might have mattered most in Taiwan were quite different from those that might have had the most impact in, say, Korea (where the conglomerate-centered private sector called for a different pattern of government intervention than Taiwan with its myriad dynamic small and medium firms) or Japan (where, according to Wade, public-private cooperation went much further than in Taiwan).

But to raise these problems is not to diminish what Wade has achieved. On the contrary, the strength of his book is precisely that it poses the empirical and conceptual questions that should be at the center of research on economic development over the next decade.

Brian Levy

Stephan Haggard and Robert R. Kaufman (editors)

The Politics of Economic Adjustment

Princeton University Press, Princeton, NJ, USA, 1992, vii + 356 pp., $49.95 ($16.95 paper).

Both this volume—and the one to which it is a sequel (*Economic Crisis and Policy Choice, 1990*)—are representative of a genre that emerged in the wake of the debt crisis of the early 1980s and in which political analysts sought to understand the radical changes in ideologies and in the strategies of economic development in the Third World. This volume has the advantage of taking account of the outpourings of other analysts, as well as the deepening insights that this close-knit group of contributors were able to garner from their own decade-long involvement in exploring the political determinants of economic policy choice, cross-nationally and over time. The task they set themselves was to explain differences in the timing of reform initiatives, the degree to which orthodox prescriptions were adopted, and the extent to which the reforms were sustained and consolidated.

Three principal issues are addressed in

the book: the relative weights to be assigned to international factors and to domestic variables in explaining policy choices; the role of state institutions and governing elites in initiating and consolidating reform processes; and the influence of broader political and institutional settings in mediating the distributive conflicts among contending social groups that arise inevitably whenever fundamentally new policy directions are being pursued.

The first issue is addressed in two essays by Barbara Stallings and Miles Kahler. Not surprisingly, they end up giving somewhat different answers. Stallings argues convincingly that the differences in policy choices in the 1970s and the 1980s were explicable in terms of changing international market forces (terms of trade, interest rates, commercial banking flows) and the greater political leverage exerted in the latter period by external actors—official creditors, the key international financial institutions (IFIs), notably the IMF and the World Bank Group, and the commercial banks. Kahler is not persuaded that the power of creditor groups was ever strong enough to enforce the terms of the "conditionality bargain." While Stallings is surely correct when looking at the broad variations over time, Kahler's doubts arise in the context of specific country situations. Although employing different vocabulary—"linkages" by Stallings and "social learning" by Kahler, both emphasize the need for a wide diffusion of ideas before a consensus can be established for successful adjustment. The IFIs must take to heart one special insight: transnational alliances between them and like-minded technical policy-making groups within member countries will not deliver reforms that endure unless the adjustment rationale is acceptable to "broader segments of the political elites and relevant publics."

The second issue is covered by contributions from Peter Evans and John Waterbury. The fundamental problem they address is how to explain the undertaking of a reform process in a situation where the would-be losers can clearly apprehend their losses while the beneficiaries are unable to quantify or even perceive their gains. Waterbury focuses on "change teams" that have, under economic crisis conditions, a high degree of discretionary authority and are insulated by the highest level political authorities from the pressures of "rent-seeking" interests. Evans has a broader concept of autonomy or "embeddedness": the bureaucratic elites must possess a kind of institutional cohesion that allows them to build bases of support among private sector beneficiaries without becoming captives of such groups. An important insight that emerges from these essays is the inherent difficulty of applying through the State a set of market-oriented reforms that are designed to reduce the power of the State. For many reforms to work, the administrative and technical capabilities of the State must be strengthened, not weakened. Indeed, recent experience of adjustment desiderata in Eastern Europe suggests that the tasks that the State apparatus must undertake are even more basic than are typically discussed in the context of the Third World.

The third set of issues is explored in a separate essay by Joan Nelson and in two joint ones by Haggard and Kaufman. While the latter are concerned with the political aspects of inflation and stabilization and the compatibility of economic liberalization with political democratization, Nelson analyses the politics of income distribution in the adjustment process. She points to the paradox that confronts those seeking to shield the very poorest. While it is technically possible to devise carefully targeted "safety nets," the political incentives for so doing are much too weak unless the benefits can be extended to more influential "popular sector" groups; however, bringing them into the net produces additional budgetary strains, which the adjustment program is typically seeking to reduce. Nelson points out ways to deal with the problem through program design that can be used to create new coalitions of support. Her analysis, as indeed prescriptions of other political analysts, raises a special dilemma for the IFIs; for while their mandates require them to serve their membership on the basis of strictly technical criteria, taking account of political considerations in program design may well be the key to successful adjustment.

Azizali Mohammed

Gerald K. Helleiner (editor)

Trade Policy, Industrialization, and Development

New Perspectives

Oxford University Press, New York, NY, USA, 1992, xi + 324 pp., $87.

This book is a collection of 11 essays that emerged from a research project supported by the World Institute for Development Economics Research (WIDER). The papers are of uniformly high quality, combining conceptual analyses with case studies. Two unifying threads run through the volume: skepticism about the efficacy of markets as the sole guarantor of economic development; and an admission of ignorance about the determinants of successful growth and industrialization experiences. Cautionary words about the limits of our knowledge pepper virtually every paper in the book.

It is this blend of skepticism about markets and acknowledged deficiencies in our understanding of the true ingredients of success that highlight the volume's most glaring omission as a guide to policy—consideration of the political economy of government intervention. A discussion of why governments might want to be cautious about supplanting the market in the presence of uncertainty and imperfect markets for political influence would have made the volume more complete. The old promotional technique of working the word "new" into the book's title is no justification for excluding a discussion of public choice theory's contribution to the debate.

Papers by Dani Rodrik and Howard Pack contain interesting discussions about trade policy and productivity. Neither piece argues that trade liberalization is hostile to enhanced productivity and technical efficiency, but Rodrik suggests it might not matter, while Pack concludes that it is not enough.

The view that direct government involvement of one kind or another is essential for economic advancement pervades the book; the prescriptions offered are diverse. Frances Stewart and Ejaz Ghani make a traditional case for intervention on grounds of externalities, showing great faith in governments, but they

draw back in the end from the temptation of arguing that governments will unfailingly get it right. Donald Keesing and Sanjaya Lall make a case for government involvement in export market development, but there the government is seen as a facilitator of market solutions and promoter of privatization. Among the case studies, the one by Chang-Ho Yoon runs counter to many of the other papers in the volume. He argues that Korea's successful semiconductor industry relied extensively on market forces and the entrepreneurial efforts of firms, and emphasizes the shortcomings of government planners—especially in a dynamic setting with rapidly changing market conditions.

Overall, this is a book to be read, but in conjunction with an understanding of how information gaps and administrative shortcomings, together with the personal agendas of politicians and bureaucrats, might conspire to produce outcomes distressingly divergent from national development objectives. One might also ponder what kind of government and sociopolitical system it takes to ensure that once support has been given to an industry, the beneficiary does not acquire unassailable claims to its privileges, making flexible and constructive industrial policy an oxymoron.

Patrick Low

Reviving the
AMERICAN DREAM
Alice M. Rivlin
Reviving the American Dream
Brookings Institution, Washington, DC, USA, 1992, vii + 196 pp., $15.95.

The American dream is invoked every political season—usually to complacent applause, but sometimes, as happened this past US election season, to anxious reserve. Feeling overwhelmed by a litany of social and economic ills and by confusion over US responsibilities abroad, Americans are openly questioning the viability of a sacred national image—an expanding material life in a society offering opportunity and social justice. In her book, Alice Rivlin sees this juncture in US political history as an opportunity to recast American governance. Her recommendations for doing so bear hearing not only because of her high academic standing but also because her ideas have the ear of US President Clinton, who read this book during his campaign and subsequently made Rivlin Deputy Director of the Office of Management and Budget.

For those readers who want a plainly written and balanced account of the US economic dilemma—in particular, the collapse of national saving, stagnating productivity growth, rising income inequality, and the crisis in health care—Rivlin's first few chapters describe how the United States stumbled into its present mess and how these circumstances imperil the American dream. Rivlin renders this epoch fairly and clearly, avoiding the rhetoric of the apocalypse while still conveying the seriousness of the country's long-term problems. As a caveat to those who observe the economy closely, Rivlin presents little that is new in these overview chapters.

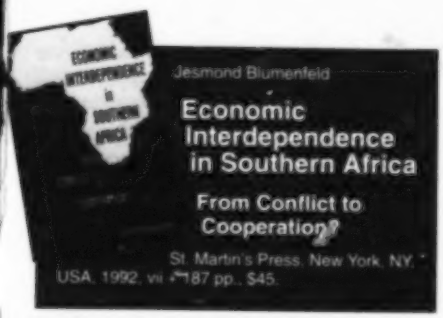
Midway through the book, however, the author takes a bolder tack by arguing for a new federalism as a solution to the US economic malaise. The fifty states, she contends, should be the purveyors of economic development—responsible for infrastructure, education, housing, and business development. The states, according to Rivlin, can meet local needs more effectively than can the national government, and the federal government ought to restrict itself to ensuring national security and the nation's social insurance programs. Although not the first policy expert to endorse a clearer separation of fiscal responsibilities, Rivlin's presentation of these issues is succinct and persuasive.

Matters do turn more complicated, however, when Rivlin becomes specific about how to pay for stronger states. Among the several schemes she outlines, Rivlin favors a national consumption tax, which she likens to a value-added tax. The tax would likely be collected at the federal level, distributed back to the states according to an agreed formula, and would replace the myriad state sales taxes now used to raise revenue. Other user taxes, a national corporate tax, and a gasoline tax are also supported by the author. Rivlin argues that a single flat rate would simplify the conduct of interstate retail business, force states to compete on the quality of their services rather than on tax incentives, and make tax collection more efficient. But the national tax, which would be set at around 6 percent (plus any additional user taxes), could constitute a significant tax increase in some states, and perhaps a regressive one; the net effect of the tax is not clear.

As a follow-up to her case for a new fiscal federalism, Rivlin proposes reforming the nation's social insurance programs, which she believes, for reasons of equity and efficiency, are best managed by Washington. Her proposal for a new health insurance policy aims to control the costs of medical care—the fastest growing costs in government budgets—and to provide health care to those who cannot afford it. The states, as a consequence, would be relieved of their current medicare and medicaid burden, which would help free up resources for local programs. With regard to social security, Rivlin believes the federal government should stop using this program's budget surplus to pay for general government expenses. The money would be better spent buying back government debt from the public, thus increasing the funds available for investment and lowering interest rates.

Rivlin proposes earnest and well-reasoned solutions to some real flaws in the US fiscal system. The only question is how much change do Americans really want. Are the fifty states likely to sit down with Congress and agree to raise taxes uniformly across the country, and perhaps disproportionately on the middle class and poor? Would the states agree to equitably redistribute the revenue from that tax? What would ensure that deficit reduction is aggressive, as Rivlin implies it should be? And, most crucial, who will provide the necessary political leadership for this massive relandscaping? President Clinton cannot raise taxes on the middle class without inviting serious political challenge, and some state governors have equal reason to fear for their jobs if they raise taxes. Rivlin, who acknowledges these difficulties, may underestimate the political resistance, or simple inertia, that would face her proposals. Nonetheless, her informative book serves as an excellent starting point for the deep policy dialogue that Americans said they wanted in November. And her new appointment suggests the country will see some of her proposals debated and implemented.

Rozlyn Coleman



St. Martin's Press, New York, NY, USA, 1992, vii + 187 pp., $45.

This book considers economic and political relations among the countries of southern Africa. Inevitably, the analysis is dominated by the relationship between countries with white minority rule (South Africa and, earlier, Zimbabwe) and the other countries in the region. The focus is on the economic and political implications of interdependence, and the circumstances in which governments might want to either limit or promote economic interdependence with other states in the region.

The book is divided into three sections of approximately equal length. The first provides a brief historical overview of economic relations up to independence, centering on the contrast between the economic forces toward greater regional integration and political tendencies toward separation. The latter reflect two underlying factors—the extremely unequal development of the region (grounded in the location of mineral deposits), which provoked fears of South African economic domination, and the structure of the economies, which, being based on exports of raw materials, are in many ways competitive rather than complementary.

The second section considers the political economy of interdependence. Two theories are contrasted, the dependency theory, which argues that economic relations with "colonial" powers (in this case South Africa) are inherently biased against the "peripheral" country, and the *laissez-faire* view that economic interactions are voluntary, and hence must imply a gain in welfare. The author argues that neither theory is adequate; dependency ignores the gains from integration while the *laissez-faire* approach ignores potential costs, and a more balanced approach is outlined. While interesting, this section has some curious lapses. Blumenfeld suggests that the ratio of trade to output is not a good measure of dependence, but no alternative measure is provided. There is a considerable discussion of political manipulation of the terms of trade, but no references to the economic literature on optimal tariff levels. The most curious lapse is the absence of any discussion of intertemporal factors when discussing recent relations between black African states and South Africa. I doubt whether many governments believed that cutting ties with South Africa would improve "welfare" in the short run, rather, they believed that they would gain in the future from having a more amenable neighbor.

These limitations continue into the third section, which deals with the current situation. The lack of a measure of economic integration confines the discussion to generalities, while the importance given to the dependency hypothesis limits the usefulness of the analysis of economic sanctions. This is a pity, because the basic point being made—that the economic conflicts in the region have structural causes that will not be solved simply by the end of white minority rule—is a valuable lesson for all those interested in the future of southern Africa.

Tamim Bayoumi

Cambridge University Press, Cambridge, MA, USA, 1992, xxii + 247 pp., $49.95.

Attention in academic and policy-making circles is returning to institutional arrangements that limit the flexibility of exchange rates. This volume collects papers that formally model such arrangements, ranging from the classic gold standard to the European Monetary System (EMS).

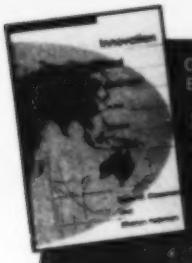
The starting point for the essays in this book is a framework of uncertainty: we do not know exactly what determines the exchange rate (this is not for lack of trying; the past two decades have not yielded a satisfactory model of exchange rate determination), but whatever it is, let's call it a "fundamental" variable, and assume that we know its stochastic properties. The target zone approach that follows from these assumptions promises a nonlinear relationship between fundamentals and the exchange rate, opening up renewed possibilities to restore previously misspecified linear exchange rate models. It is surprising how far this methodology carries: from explaining reduced volatility of exchange rates in the EMS to dynamics of entering or exiting the gold standard.

The book is divided into five parts. In the first part, Krugman gives a useful and accessible introduction to the field of target zone models. Some extensions are discussed in the second part, including an elaboration by Flood and Garber on the link between speculative attack and target zone models. The third part focuses on regime shifts. Miller and Sutherland study the difference in the behavior of the pound sterling between the anticipation of it joining the gold standard in the 1920s, and the anticipation of the pound joining the EMS. Their conclusion is that the degree of credibility varied, with Thatcher's opposition to sterling's entrance contributing to a costly transition.

Credibility issues appear in virtually all papers in this volume, especially in the fourth part, in which the ability to defend the currency with limited reserves becomes the crucial element. Focusing on the availability of reserves, Krugman and Rotemberg point to the special nature of the target zone solution. Bertola and Caballero, after studying the relations between intervention, reserves, and realignments, find that a sustainable intervention policy leads to the disappearance of nonlinearities in the long run. The final chapter of the book, by Smith and Spencer, is devoted to estimating parameters in a target zone model.

The book is at times too technical for the insights it provides, something that frequently happens when a new tool is developed. As a result, it would not qualify as a layperson's introduction to the field. However, it is to be welcomed as a timely dissemination of some of the essential contributions to the study of target zones.

Karl Driessen



Gene M. Grossman and Elhanan Helpman

Innovation and Growth in the Global Economy

The MIT Press, Cambridge, MA, USA, 1991. xiv + 359 pp. $29.95.

This book offers a comprehensive tour of endogenous growth theory using general equilibrium techniques as the mode of analysis. The authors review traditional growth theory—which posits economic growth as a function of the accumulation of factors of production (especially physical capital) and some exogenously given rate of productivity increase—before introducing the reader to a simple model of endogenous growth.

Endogenous growth theory includes the increase in productivity as an economic activity—call it research and development (R&D)—whose inputs are labor, capital, and the current stock of knowledge, and whose outputs are technical change and more knowledge. Unlike other inputs, knowledge is a quasi-public good in that it can be used by many agents at the same time. Endogenous growth theories can produce long-term sustainable growth because the increasing stock of knowledge lowers the cost of technical change, and technical change forestalls diminishing returns to other economic inputs. Moreover, the rate of growth of economic activity is endogenous to the economy and depends on economic actions, particularly the level of resources devoted to R&D.

The authors devote most of their book to introducing successive enrichments and refinements to the basic model, albeit in a highly stylized way. For example, they analyze a range of issues: differing types of knowledge where general technical knowledge is easily accessible to others but product-specific knowledge is not; differing types of technical change (new products versus improved quality in existing products); and the effects of trade among countries of different sizes or with differing factor endowments.

While the analyses presented show that strong assumptions produce strong results, these results do not lead to simple rules of thumb for policy. Instead, appropriate policy interventions depend critically on the specific assumptions embodied in the underlying economic framework. For example, based on their assumption that R&D produces knowledge, one might imagine that having a nation subsidize R&D would improve national welfare. But in some of their formulations, subsidizing R&D is harmful because excessively rapid innovation leads to rapid obsolescence of production capacity and reduces profits.

Grossman and Helpman do find, however, that subsidizing R&D is a better way to increase innovation than subsidizing the production of high technology goods. In their framework, increasing the production of high technology products often reduces the production of R&D because both activities use similar inputs (highly skilled labor). Given the public good nature of knowledge in their model, they typically find that the world is better off when knowledge can move freely across national boundaries.

The authors use sophisticated mathematics to develop their insights. Frequent policy summaries and a concluding chapter, however, synthesize and make accessible their findings. The elegant theorizing, however, needs to be buttressed by empirical work if the specific policy advice offered is to be taken seriously. For example, the assumption that the use of labor to carry out R&D is highly substitutable with labor used to produce high-tech products should be empirically tested.

Gregory Ingram

Books *in brief*

Narendra P. Sharma (editor)

Managing the World's Forests

Looking for Balance Between Conservation and Development

Kendall/Hunt Publishing Company, Dubuque, Iowa, USA, 1992, iii + 605 pp., $34.95.

Long taken for granted, the world's forests must now be saved. Nearly half of the world's population depends to some extent on forest goods, yet deforestation is increasing at an alarming pace, and the exploitation of forests raises the specter of climate change, degraded lands, the destruction of ecosystems, and the loss of species. Some nations have begun to act, but as the highly charged debate at the Rio Earth Summit in 1992 showed, there is anything but a consensus on (1) how best to arrest destructive deforestation and manage existing forests on a sustainable basis, and (2) how best to increase forest resources through reforestation and afforestation.

At such a time, this book is a welcome addition, offering readers an unusual diversity of views—sometimes, even opposing views—from authors representing the social, physical, and biological sciences. It is an outgrowth of a recent comprehensive study undertaken by the World Bank, which drew on its own and outside experts, to help the institution define its evolving forestry policy. The ground covered is vast, ranging from agroforestry, biological diversity, and watershed management to forest valuation, the sociocultural issues, and the conditions for sustainable development. At the end is a handy statistical appendix filled with hard-to-find data, compiled by country and region, on forest resources and forestry activities.

Richard Layard, Olivier Blanchard, Rudiger Dornbusch, and Paul Krugman

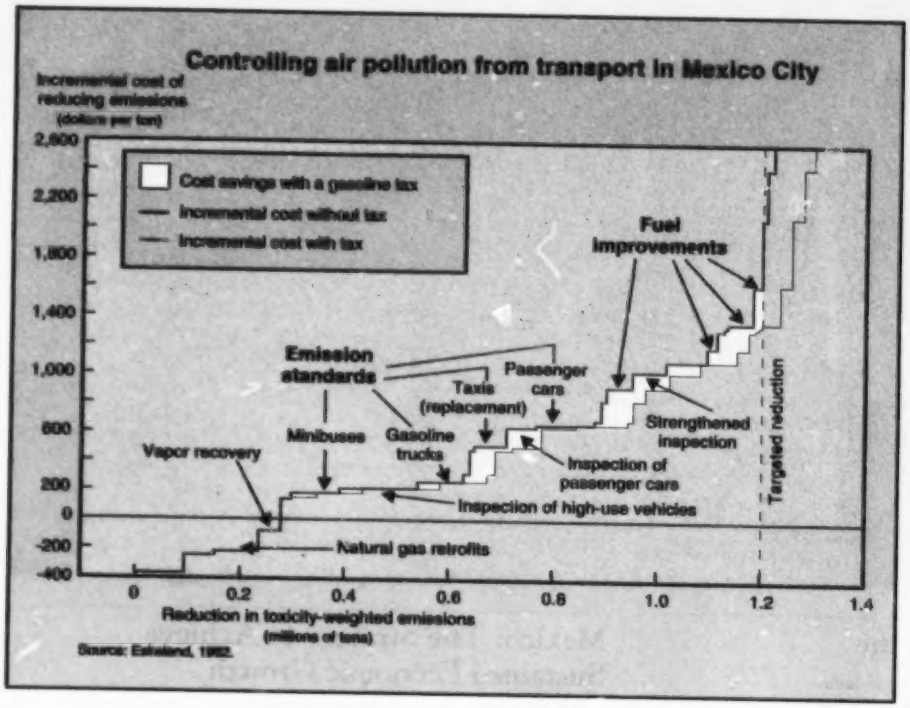
East-West Migration

The Alternatives

The MIT Press, Cambridge MA, USA, 1992, 94 pp., $19.95.

This topical and readable little book provides a survey of the economic factors influencing migration from Eastern to Western Europe, and the likely effects of a mass movement. The authors concede that the supply of migrants, though not unusually high by historical standards, will far exceed what will be politically acceptable. They argue that significant migration should nevertheless be encouraged: all sectors of Western European society could benefit directly, and everyone has an interest in promoting the stability of Eastern Europe through the "safety valve" of migration. Pressure to migrate can be mitigated, but not eliminated, by liberalizing trade, encouraging foreign direct investment, and providing aid conditional on the pursuit of sound policies by the governments of Eastern Europe. Economists will find the arguments familiar and eminently sensible. Hopefully some policymakers and the non-economist public will not be put off by the minimum of graphs and equations included, so that this pamphlet can contribute to the formulation of a more rational policy toward immigration from Eastern Europe and elsewhere. The recommended price seems rather dear for such a little book.

The chart on p. 29 in the article by Gunnar Eskeland (December 1992) inadvertently showed the wrong scale. The chart below is the corrected version.



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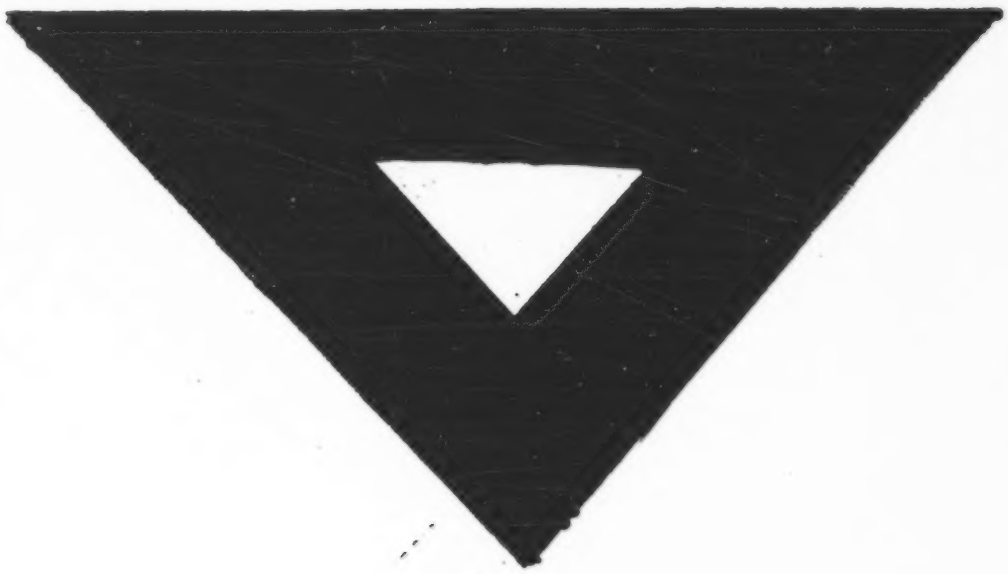
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